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Born 9/20/1949 in Istanbul, Turkey  
Citizenship: Turkey

Fluent languages: Turkish, French, English  
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**Former President (2009-16), Sabancı Univ.** <http://webprs.khas.edu.tr/~nberker/> <http://web.mit.edu/physics/berker>

Married to Bedia Erim Berker, Professor of Chemistry, Istanbul Technical University

Sons: Ahmet Selim Berker, Professor of Philosophy, Harvard University, and Ratip Emin Berker

Degrees: Bachelor of Science in Physics, Massachusetts Institute of Technology, 1971  
Bachelor of Science in Chemistry, Massachusetts Institute of Technology, 1971  
Master of Science in Physics, University of Illinois at Urbana-Champaign, 1972  
Ph.D. in Physics, University of Illinois at Urbana-Champaign, 1977

Education and Professional Experience

1967 First place graduation from Robert College lycee, Istanbul, Turkey  
1967-71 Undergraduate student at MIT, with Undergraduate Scholarship from MIT:  
5-year double-degree program in Physics and Chemistry completed in 4 years  
1968 MIT Freshman Chemistry Prize  
1970-71 Course manager and tutor in Quantum Mechanics, MIT Education Research Center  
1971 American Institute of Chemists Student Award  
1971 Elected to Phi Beta Kappa Honorary Scholarship Society  
1971-76 Graduate student with Professor M. Wortis, Department of Physics, University of Illinois,  
fully supported by University Fellowships, Research and Teaching Assistantships  
Sum. 1975 Guest Junior Research Associate, Department of Physics, Brookhaven National Laboratory  
Sum. 1979 Member, USA National Academy of Science exchange group to the USSR Academy of Science  
1977-79 Postdoctoral Research Fellow, Department of Physics, Harvard University  
**1979-04 Assistant Professor (1979-82), Associate Professor (1982-88), Professor of Physics (1988-04),  
Emeritus Professor of Physics (2004-), Massachusetts Institute of Technology**  
1981-82 Consultant, IBM Zürich Laboratory  
1981-85 Alfred P. Sloan Fellow  
1/1983 Visiting Associate Professor of Physics, Catholic University of Rio de Janeiro, Brazil  
6/1984 Tenure awarded at MIT, one year ahead of schedule  
1987 MIT Department of Physics Buechner Teaching Prize  
4/1987 Visiting Associate Professor of Physics, Oxford University, England  
1988 Science Award of the Scientific and Technical Research Council of Turkey (TÜBİTAK)  
4/1988 Visiting Associate Professor of Physics, Katholieke Universiteit, Leuven, Belgium;  
Solvay Lecturer in Brussels, Belgium; Ehrenfest Lecturer in Leiden, the Netherlands  
1988- Fellow of the American Physical Society  
1989- Consulting Professor, Bilkent University, Turkey  
1993-94 Interdisciplinary Research Group Leader, Center for Materials Science and Engineering, MIT  
1994, 97-99 Founder and co-chairperson, Istanbul Technical University Statistical Physics Days. Editor of Proceedings  
1995 MIT School of Science Teaching Prize for Excellence in Graduate Education  
1996 Outstanding Turkish Scientist Citation, given by the Academy of Sciences of Turkey  
1996-04 Adjunct Professor, Bosphorus University, Turkey  
1999-04 Sabbatical leave and extended leave of absence from MIT  
**1999-05 Professor of Physics, Istanbul Technical University, Turkey**  
**2000-03 Head of the Department of Physics, Istanbul Technical University**  
**2003-04 Dean of the School of Sciences and Letters, Istanbul Technical University**  
1999 Elected Full Member of the Academy of Sciences of Turkey (2008-12 Academy Council Member)  
2000-11 Executive Committee (2007-11 Chairperson), TÜBİTAK F. Gürsey Research Inst. for Basic Sci., Turkey  
2000-04 Academic Officer, Project Interphase, MIT  
2003- Founder and Director, MIT - Turkey Freshman Scholars Program  
**2005-08 Professor of Physics, Koç University.** Supervised the first Physics Doctorate at Koç University.  
2008- Started in Turkey univ. summer classes for high school students (F. Gürsey Inst, Sabancı U, Kadir Has U)  
2007 Humboldt Research Award  
2008 Best Teacher of the Year, KoçPost Student Newspaper  
**2009-16 President, Sabancı University (see page 28)**  
2011 Elected to Academia Europaea  
2012- Energy Faculty at the MIT Energy Initiative  
**2017 - Dean of Engineering and Natural Sciences, Kadir Has University**  
**2018- Vice-President, Kadir Has University**  
2017- Senior Scholar, Istanbul Policy Center, Sabancı University  
2017 Honor Award of the Turkish Physical Society (top award of TPS)

Theses:

1. "Solutions of Binding Site Models of Membranes"  
B.S. Thesis, 211 pages (MIT, 1971).
2. "Phase Transitions and Critical Phenomena: Universality and Global Multicritical Phase Diagrams from Position-Space Renormalization-Group Studies"  
Ph.D. Thesis, 83 pages (U. of Illinois, 1977).

Publications:

3. "Uniaxial and Biaxial Ordering in Magnetic Crystals: Molecular-Field Theory"  
J. Sivardière, A.N. Berker, and M. Wortis, Phys. Rev. B 7, 343-351 (1973).
4. "Critical Interactions for the Triangular Spin-s Ising Model by a Spin-Restructuring Transformation"  
A.N. Berker, Phys. Rev. B 12, 2752-2758 (1975).
5. "Blume-Emery-Griffiths-Potts Model in Two Dimensions: Phase Diagram and Critical Properties from a Position-Space Renormalization Group"  
A.N. Berker and M. Wortis, Phys. Rev. B 14, 4946-4963 (1976).
6. "Exact Renormalization Group with Griffiths Singularities and Spin-Glass Behavior: The Random Ising Chain"  
G. Grinstein, A.N. Berker, J. Chalupa, and M. Wortis, Phys. Rev. Lett. 36, 1508-1511 (1976).
7. "Renormalization-Group Treatment of a Potts Lattice Gas for Krypton Adsorbed onto Graphite"  
A.N. Berker, S. Ostlund, and F.A. Putnam, Phys. Rev. B 17, 3650-3665 (1978).
8. "Phase Transitions in Gases Adsorbed onto Graphite and the Position-Space Renormalization-Group Method"  
A.N. Berker, S. Ostlund, and F.A. Putnam, in Recent Advances in Engineering Science, ed. R.L. Sierakowski (University of Florida, 1978), pp. 361-365.
9. "Multicritical Phase Diagram of Gases Adsorbed on Graphite: Temperature Variation and Finite Size Effects"  
S. Ostlund and A.N. Berker, Phys. Rev. Lett. 42, 843-846 (1979).
10. "Superfluidity and Phase Separation in Helium Films"  
A.N. Berker and D.R. Nelson, Phys. Rev. B 19, 2488-2503 (1979).
11. "Two-Dimensional XY Magnets with Annealed Non-Magnetic Impurities"  
A.N. Berker and D.R. Nelson, J. Appl. Phys. 50, 1799-1801 (1979).
12. "A Binding Site Model of Membrane Transport: Binary and Cooperative Flows"  
M.H. Lee, A.N. Berker, H.E. Stanley, and A. Essig, J. Membrane Biology 50, 205-224 (1979).
13. "Renormalisation-Group Calculations of Finite Systems: Order Parameter and Specific Heat for Epitaxial Ordering"  
A.N. Berker and S. Ostlund, J. Phys. C 12, 4961-4975 (1979).
14. "First- and Second-Order Phase Transitions in Potts Models: Renormalization-Group Solution"  
B. Nienhuis, A.N. Berker, E.K. Riedel, and M. Schick, Phys. Rev. Lett. 43, 737-740 (1979).
15. "First- and Second-Order Phase Transitions of Infinite-State Potts Models in One Dimension"  
A.N. Berker, D. Andelman, and A. Aharony, J. Phys. A 13, L413-418 (1980).
16. "Structural Transitions between Epitaxially Ordered Phases in Adsorbed Submonolayers"  
S. Ostlund and A.N. Berker, Phys. Rev. B 21, 5410-5423 (1980).
17. "Island Growth and Orientational Locking of Potassium Intercalated in Graphite"  
A.N. Berker, N. Kambe, G. Dresselhaus, and M.S. Dresselhaus, Phys. Rev. Lett. 45, 1452-1456 (1980).
18. "Intercalate Layer Structure in Graphite-Alkali Metal Compounds"  
M.S. Dresselhaus, N. Kambe, A.N. Berker, and G. Dresselhaus, Synthetic Metals 2, 121-131 (1980).
19. "Commensurate Order, Multicritical Points, and Finite Sizes in Adsorbed Systems"  
A.N. Berker, in Ordering in Two Dimensions, ed. S.K. Sinha (Elsevier, New York, 1980), pp. 9-15.
20. "Honeycomb Lattice: Application to Adsorbed Systems"  
W. Kinzel, M. Schick, and A.N. Berker, in Ordering in Two Dimensions, ed. S.K. Sinha (Elsevier, New York, 1980), pp. 381-383.

21. "Ground-State Entropy and Algebraic Order at Low Temperatures"  
A.N. Berker and L.P. Kadanoff, *J. Phys. A* 13, L259-264 (1980).  
corrigendum 13, 3786 (1980).
22. "Frustrated Spin-Gas Model for Doubly Reentrant Liquid Crystals"  
A.N. Berker and J.S. Walker, *Phys. Rev. Lett.* 47, 1469-1472 (1981).
23. "q-State Potts Models in d Dimensions: Migdal-Kadanoff Approximation"  
D. Andelman and A.N. Berker, *J. Phys. A* 14, L91-96 (1981).
24. "Critical Exponents and Marginality of the Four State Potts Model: Monte Carlo Renormalization Group"  
R.H. Swendsen, D. Andelman, and A.N. Berker, *Phys. Rev. B* 24, 6732-6735 (1981).
25. "Exact Criticality Condition for Randomly Layered Ising Models with Competing Interactions on a Square Lattice"  
M. Kardar and A.N. Berker, *Phys. Rev. B* 26, 219-225 (1982).
26. "Scaling for First-Order Phase Transitions in Thermodynamic and Finite Systems"  
M.E. Fisher and A.N. Berker, *Phys. Rev. B* 26, 2507-2513 (1982).
27. "Random Field Effects in Metamagnet Tricritical Point Measurements"  
R.J. Birgeneau and A.N. Berker, *Phys. Rev. B* 26, 3751-3757 (1982).
28. "Hyperscaling and Crossover Exponents near the Percolation Threshold"  
Y. Gefen, A. Aharony, Y. Shapir, and A.N. Berker, *J. Phys. C* 15, L801-805 (1982).
29. "First- and Second-Order Phase Transitions in Potts Models: Competing Mechanisms (invited)"  
A.N. Berker and D. Andelman, *J. Appl. Phys.* 53, 7923-7926 (1982).
30. "Spin-Glass Behavior in Frustrated Ising Models with Chaotic Renormalization-Group Trajectories"  
S.R. McKay, A.N. Berker, and S. Kirkpatrick, *Phys. Rev. Lett.* 48, 767-770 (1982).
31. "Commensurate-Incommensurate Phase Diagrams for Overlayers from a Helical Potts Model"  
M. Kardar and A.N. Berker, *Phys. Rev. Lett.* 48, 1552-1555 (1982).
32. "Amorphously Packed, Frustrated Hierarchical Models: Chaotic Rescaling and Spin-Glass Behavior"  
S.R. McKay, A.N. Berker, and S. Kirkpatrick, *J. Appl. Phys.* 53, 7974-7976 (1982).
33. "Cratering Due to Surface Defects in the Gaussian Model"  
E. Nowak, J.M. Deutch, and A.N. Berker, *J. Chem. Phys.* 78, 529-535 (1983).
34. "Critical Behavior of the Three-State Potts Model: Monte Carlo Renormalization Group"  
R.H. Swendsen and A.N. Berker, *Phys. Rev. B* 28, 3897-3903 (1983).
35. "Study of High-Order Reconstructions of the Si(100) Surface"  
J. Ihm, D.H. Lee, J.D. Joannopoulos, and A.N. Berker, *J. Vac. Sci. Technol. B* 1, 705-708 (1983).
36. "Biaxial Order in Liquid Crystals and their Mixtures: A Potts-Ising Model"  
R.G. Caflisch, Z.-Y. Chen, A.N. Berker, and J.M. Deutch, *Phys. Rev. A* 30, 2562-2567 (1984).
37. "Oxygen Chemisorbed on Ni(100): A Renormalization-Group Study of the Global Phase Diagram"  
R.G. Caflisch and A.N. Berker, *Phys. Rev. B* 29, 1279-1286 (1984).
38. "Magnetic Susceptibilities of Cluster-Hierarchical Models"  
S.R. McKay and A.N. Berker, *Phys. Rev. B* 29, 1315-1320 (1984).
39. "Scale-Invariant Quenched Disorder and its Stability Criterion at Random Critical Points"  
D. Andelman and A.N. Berker, *Phys. Rev. B* 29, 2630-2635 (1984).
40. "Ordering under Random Fields: Renormalization-Group Arguments"  
A.N. Berker, *Phys. Rev. B Rapid Comm.* 29, 5243-5245 (1984).
41. "Orderings of a Stacked Frustrated Triangular System in Three Dimensions"  
D. Blankshtein, M. Ma, A.N. Berker, G.S. Grest, and C.M. Soukoulis, *Phys. Rev. B Rapid Comm.* 29, 5250-5252 (1984).
42. "Fully and Partially Frustrated Simple-Cubic Ising Models: Landau-Ginzburg-Wilson Theory"  
D. Blankshtein, M. Ma, and A.N. Berker, *Phys. Rev. B* 30, 1362-1365 (1984).

43. "Orderings and Renormalization-Group Flows of a Stacked Frustrated Triangular System in Three Dimensions"  
A.N. Berker, G.S. Grest, C.M. Soukoulis, D. Blankschtein, and M. Ma, *J. Appl. Phys.* 55, 2416-2418 (1984).
44. "Hierarchical Models and Chaotic Spin Glasses"  
A.N. Berker and S.R. McKay, *J. Stat. Phys.* 36, 787-793 (1984).
45. "Chaotic Spin Glasses: An Upper Critical Dimension (invited)"  
S.R. McKay and A.N. Berker, *J. Appl. Phys.* 55, 1646-1648 (1984).
46. "Theory of Reentrant Melting of Krypton Adsorbed on Graphite"  
R.G. Caflisch, A.N. Berker, and M. Kardar, *J. Vac. Sci. Technol. A* 3, 1592-1593 (1985).
47. "Reentrant Melting of Krypton Adsorbed on Graphite and the Helical Potts-Lattice-Gas Model"  
R.G. Caflisch, A.N. Berker, and M. Kardar, *Phys. Rev. B* 31, 4527-4537 (1985).
48. "Modified Hyperscaling Relation for Phase Transitions under Random Fields"  
A.N. Berker and S.R. McKay, *Phys. Rev. B* 33, 4712-4715 (1986).
49. "Quadruple Reentrance (Nematic-Smectic  $A_d$ -Nematic-Smectic  $A_d$ -Nematic-Smectic  $A_1$ ) from the Frustrated Spin-Gas Model of Liquid Crystals"  
J.O. Indekeu and A.N. Berker, *Phys. Rev. A* 33, 1158-1162 (1986).
50. "Molecular Tail Lengths, Dipole Pairings, and Multiple Reentrance Mechanisms of Liquid Crystals"  
J.O. Indekeu and A.N. Berker, *Physica A (Utrecht)* 140, 368-375 (1986).
51. "Reentrant Transition Enthalpies of Liquid Crystals: The Frustrated Spin-Gas Model and Experiments"  
J.O. Indekeu, A.N. Berker, C. Chiang, and C.W. Garland, *Phys. Rev. A* 35, 1371-1375 (1987).
52. "The Frustrated Spin-Gas Theory of Multiply Reentrant Liquid Crystals"  
A.N. Berker and J.O. Indekeu, in *Incommensurate Crystals, Liquid Crystals, and Quasi-Crystals*, eds. J.F. Scott and N.A. Clark (Plenum, New York, 1987), pp.205-213.
53. "Ab-Initio Statistical Mechanics of GeTe"  
K.M. Rabe, J.D. Joannopoulos, and A.N. Berker, in *18th International Conference on the Physics of Semiconductors*, ed. O. Engstrom (World Scientific, Singapore, 1987), Vol. 2, pp. 1221-1224.
54. "Molecular Structure and Reentrant Phases in Polar Liquid Crystals"  
J.O. Indekeu and A.N. Berker, *J. Phys. (Paris)* 49, 353-362 (1988).
55. "Equimagnetization Lines in the Hybrid-Order Phase Diagram of the  $d=3$  Random-Field Ising Model (invited)"  
S.R. McKay and A.N. Berker, *J. Appl. Phys.* 64, 5785-5786 (1988).
56. "Random-Field Distributions of  $d$ -Dimensional Ising Models: Evolution under Scale Change and Fixed Distributions"  
S.R. McKay and A.N. Berker, in *Fractal Aspects of Materials: Disordered Systems*, eds. D.A. Weitz, L.M. Sander, and B.B. Mandelbrot (Materials Research Society, Pittsburgh, 1988), pp. 215-217.
57. "Mixtures in the Frustrated Spin-Gas Theory of Reentrant Polar Liquid Crystals"  
J.F. Marko, J.O. Indekeu, and A.N. Berker, *Phys. Rev. A* 39, 4201-4206 (1989).
58. "Pressure Studies on Phase Transitions in 4-alkoxyphenyl-4'-nitrobenzoyloxybenzoates"  
V.N. Raja, B.R. Ratna, R. Shashidhar, G. Heppke, C. Bahr, J.F. Marko, J.O. Indekeu, and A.N. Berker, *Phys. Rev. A Rapid Comm.* 39, 4341-4344 (1989).
59. "Random-Field Mechanism in Random-Bond Multicritical Systems"  
K. Hui and A.N. Berker, *Phys. Rev. Lett.* 62, 2507-2510 (1989).  
erratum 63, 2433 (1989).
60. "Harris Criterion for Direct and Orthogonal Quenched Randomness"  
A.N. Berker, *Phys. Rev. B* 42, 8640-8642 (1990).
61. "Magnetization of the  $d$ -Dimensional Random-Field Ising Model: An Intermediate Critical Dimension"  
S.R. McKay and A.N. Berker, in *New Trends in Magnetism*, eds. M.D. Coutinho-Filho and S.M. Rezende (World Scientific, Singapore, 1990), pp. 96-102.

62. "Finite-Temperature Phase Diagram of Vicinal Si(100) Surfaces"  
O.L. Alerhand, A.N. Berker, J.D. Joannopoulos, D. Vanderbilt, R.J. Hamers, and J.E. Demuth, *Phys. Rev. Lett.* **64**, 2406-2409 (1990).
63. "Phase Transitions on Misoriented Si(100) Surfaces"  
O.L. Alerhand, A.N. Berker, J.D. Joannopoulos, and D. Vanderbilt, in 20th International Conference on the Physics of Semiconductors, eds. E.M. Anastassakis and J.D. Joannopoulos (World Scientific, Singapore, 1990), pp.2181-2188
64. "Finite-Temperature Phase Diagram of Vicinal Si(100) Surfaces: Alerhand et al Reply"  
O.L. Alerhand, A.N. Berker, J.D. Joannopoulos, D. Vanderbilt, R.J. Hamers, and J.E. Demuth, *Phys. Rev. Lett.* **66**, 962 (1991).
65. "Monte Carlo Mean-Field Theory and Frustrated Systems in Two and Three Dimensions"  
R.R. Netz and A.N. Berker, *Phys. Rev. Lett.* **66**, 377-380 (1991).
66. "Hard-Spin Mean-Field Theory: Formulation for Ising, XY, and Other Models"  
R.R. Netz and A.N. Berker, *J. Appl. Phys.* **70**, 6074-6076 (1991).
67. "Monte Carlo Mean-Field Theory and Frustrated Systems in Two and Three Dimensions: Netz and Berker Reply"  
R.R. Netz and A.N. Berker, *Phys. Rev. Lett.* **67**, 1808 (1991).
68. "Multicritical Phase Diagrams of the Blume-Emery-Griffiths Model with Repulsive Biquadratic Coupling"  
W. Hoston and A.N. Berker, *Phys. Rev. Lett.* **67**, 1027-1030 (1991).
69. "Dimensionality Effects on the Multicritical Phase Diagrams of the Blume-Emery-Griffiths Model with Repulsive Biquadratic Coupling: Mean-Field and Renormalization-Group Studies"  
W. Hoston and A.N. Berker, *J. Appl. Phys.* **70**, 6101-6103 (1991).
70. "Absence of Temperature-Driven First-Order Phase Transitions in Systems with Random Bonds"  
A.N. Berker and K. Hui, in Science and Technology of Nanostructured Magnetic Materials, eds. G.C. Hadjipanayis and G.A. Prinz (Plenum, New York, 1991), pp. 411-417.
71. "Absence of Temperature-Driven First-Order Phase Transitions in Systems with Random Bonds (invited)"  
A.N. Berker, *J. Appl. Phys.* **70**, 5941-5945 (1991).
72. "Smectic C Order, In-Plane Domains, and Nematic Reentrance in a Microscopic Model of Liquid Crystals"  
R.R. Netz and A.N. Berker, *Phys. Rev. Lett.* **68**, 333-336 (1992).
73. "Microscopic Liquid Crystal Theory of Nematic Reentrance, Smectic C Ordering, and In-Plane Domain Formation"  
R.R. Netz and A.N. Berker, in Phase Transitions in Liquid Crystals, ed. S. Martellucci and A.N. Chester (Plenum, New York, 1992), pp. 109-124.
74. "Statistical Mechanics of Phase Transitions with a Hierarchy of Structures"  
A.N. Berker, R.G. Caflisch, and M. Kardar, in Hierarchically Structured Materials, ed. I.A. Aksay (Materials Research Society, Pittsburgh, 1992), pp. 309-312.
75. "Renormalization-Group Theory of an Internal Critical Endpoint Structure: The Blume-Emery-Griffiths Model with Biquadratic Repulsion"  
R.R. Netz and A.N. Berker, *Phys. Rev. B* **47**, 15019-15022 (1993).
76. "Critical Behavior Induced by Quenched Disorder"  
A.N. Berker, *Physica A* **194**, 72-76 (1993).
77. "Phase Diagram of the Ising Model on the Square Lattice with Crossed Diagonal Bonds"  
A.N. Berker and K. Hui, *Phys. Rev. B* **48**, 12393-12398 (1993).
78. "New Critical and Multicritical Phenomena Induced by Quenched Random Bonds or Fields"  
A.N. Berker and A. Falicov, *Tr. J. Phys.* **18**, 347-353 (1994).
79. "Hard-Spin Mean-Field Theory"  
A.N. Berker, A. Kabakçioğlu, R.R. Netz, and M.C. Yalabık, *Tr. J. Phys.* **18**, 354-357 (1994).
80. "Reentrance and Other Phenomena in Polar Liquid Crystals: A Microscopic Theory with Frustration"  
A.N. Berker, J.O. Indekeu, and R.R. Netz, *Tr. J. Phys.* **18**, 358-360 (1994).

81. "Spin-Wave Bound-State Energies from an Ising Model"  
D.P. Aalberts and A.N. Berker, *Phys. Rev. B* 49, 1073-1078 (1994).
82. "Closed-Form Solutions and Free Energy of Hard-Spin Mean-Field Theory of a Fully Frustrated System"  
A. Kabakçioğlu, A.N. Berker, and M.C. Yalabik, *Phys. Rev. E* 49, 2680-2683 (1994).
83. "Asymptotic Quantum Relevance in the Finite-Temperature Phase Diagram of the tJ Model: Renormalization-Group Theory in One, Two, and Three Dimensions"  
A. Falicov and A.N. Berker, *Tr. J. Phys.* 19, 127-137 (1995).
84. "Finite-Temperature Phase Diagram of the tJ Model: Renormalization-Group Theory"  
A. Falicov and A.N. Berker, *Phys. Rev. B* 51, 12458-12463 (1995).
85. "Correlated Random-Chemical-Potential Model for the Phase Transitions of Helium Mixtures in Porous Media"  
A. Falicov and A.N. Berker, *Phys. Rev. Lett.* 74, 426-429 (1995).
86. "Renormalization-Group Theory of the Random-Field Ising Model in Three Dimensions"  
A. Falicov, A.N. Berker, and S.R. McKay, *Phys. Rev. B* 51, 8266-8269 (1995).
87. "Vicinal Si(100) Surfaces under External Strain"  
K. Cho, J.D. Joannopoulos, and A.N. Berker, *Phys. Rev. B* 53, 1002-1006 (1996).
88. "Tricritical and Critical-Endpoint Phenomena under Random Bonds"  
A. Falicov and A.N. Berker, *Phys. Rev. Lett.* 76, 4380-4383 (1996).
89. "Strong Violation of Critical Phenomena Universality under Quenched Bond Randomness"  
A. Falicov and A.N. Berker, *Tr. J. Phys.* 21, 59-63 (1997).
90. "Renormalization-Group Calculation of Local Magnetizations and Correlations: Random-Bond, Random-Field, and Spin-Glass Systems"  
D. Yeşiltepe and A.N. Berker, *Phys. Rev. Lett.* 78, 1564-1567 (1997).
91. "Renormalization-Group Study of Superfluidity and Phase Separation of Helium Mixtures Immersed in Nonrandom Aerogel"  
A. Lopatnikova and A.N. Berker, *Phys. Rev. B* 55, 3798-3802 (1997).
92. "Renormalization-Group Study of Superfluidity and Phase Separation of Helium Mixtures Immersed in a Disordered Medium"  
A. Lopatnikova and A.N. Berker, *Phys. Rev. B* 56, 11865-11871 (1997).
93. "Quenched Bond Randomness: Superfluidity in Porous Media and the Strong Violation of Universality"  
A. Falicov and A.N. Berker, *J. Low Temp. Phys.* 107, 51-75 (1997).
94. "Global Random-Field Spin-Glass Phase Diagrams in Two and Three Dimensions"  
G. Migliorini and A.N. Berker, *Phys. Rev. B* 57, 426-431 (1998).
95. "The Renormalization-Group Microscope: The Local Statistical Mechanics of Heterogeneous Systems"  
D. Yeşiltepe and A.N. Berker, *Tr. J. Phys.* 23, 77-87 (1999).
96. "Strongly Asymmetric Tricriticality of Quenched Random-Field Systems"  
A. Kabakçioğlu and A.N. Berker, *Phys. Rev. Lett.* 82, 2572-2574 (1999).
97. "First-Order Phase Transition and Evidence for Frustrations in Polyampholytic Gels"  
Y. Takeoka, A.N. Berker, R. Du, T. Enoki, A. Grosberg, M. Kardar, T. Oya, K. Tanaka, G. Wang, X. Yu, and T. Tanaka, *Phys. Rev. Lett.* 82, 4863-4865 (1999).
98. "Finite-Temperature Phase Diagram of the Hubbard Model"  
G. Migliorini and A.N. Berker, *Eur. Phys. J. B Rapid Note* 17, 3-6 (2000).
99. "Multiplicity of Ordered Phases in Frustrated Systems Obtained from Hard-Spin Mean-Field Theory"  
H. Kaya and A.N. Berker, *Phys. Rev. E Rapid Comm.* 62, R1469-1472 (2000).
100. "The A-C-A Reentrant Phase Diagram of Mixed Liquid Crystals: A Photon Transmission Study"  
H. Özbek, S. Yıldız, Ö. Pekcan, and A.N. Berker, *Int. J. Mod. Phys. B* 15, 2161-2167 (2001).
101. "A Phase Diagram of Smectogen-Non-Smectogen Binary Mixture: A Photon Transmission Study"  
S. Yıldız, I.E. Serhatlı, Ö. Pekcan, A.N. Berker, and H. Özbek, *Int. J. Mod. Phys. B* 16, 3959-3970 (2002).

102. “Smectic A-C-A Liquid Crystal Reentrance: A Photon Transmission Study”  
H. Özbek, S. Yıldız, Ö. Pekcan, and A.N. Berker, *Phase Transitions* 75, 301-308 (2002).
103. “Comparative Study of Liquid Crystalline Ordering in a Monomer, Linear Polymer, and Graft Copolymer by the Photon Transmission Technique”  
H. Özbek, S. Yıldız, Ö. Pekcan, Y. Hepuzer, Y. Yağcı, A.N. Berker, G. Galli, and E. Chiellini, *Phase Transitions* 76, 991-998 (2003).
104. “High-Degeneracy Ordering of Polyampholyte Gels from a Random-Field Model”  
D.P. Aalberts and A.N. Berker, *ARI – Bulletin of the Istanbul Technical University* 53, 2-5 (2003).
105. “Scaling of Thermal Hysteresis at Nematic-Smectic A Phase Transition in a Binary Mixture”  
S. Yıldız, Ö. Pekcan, A.N. Berker, and H. Özbek, *Phys. Rev. E* 69, 031705, 1-6 (2004).
106. “Two Superconducting Phases in the  $d=3$  Hubbard Model: Phase Diagram and Specific Heat from Renormalization-Group Theory”  
M. Hinczewski and A.N. Berker, *Eur. Phys. J. B* 48, 1-17 (2005).
107. “Multicritical Point Relations in Three Dual Pairs of Hierarchical-Lattice Ising Spin-Glasses”  
M. Hinczewski and A.N. Berker, *Phys. Rev. B* 72, 144402, 1-6 (2005).
108. “Phase Diagrams and Crossover in Spatially Anisotropic  $d=3$  Ising, XY Magnetic and Percolation Systems: Exact Renormalization-Group Solutions of Hierarchical Models”  
A. Erbaş, A. Tuncer, B. Yücesoy, and A.N. Berker, *Phys. Rev. E* 72, 026129, 1-6 (2005).
109. “ $d=3$  Anisotropic and  $d=2$  tJ Models: Phase Diagrams, Thermodynamic Properties, and Chemical Potential Shift”  
M. Hinczewski and A.N. Berker, *Eur. Phys. J. B* 51, 461-472 (2006).
110. “Inverted Berezinskii-Kosterlitz-Thouless Singularity and High-Temperature Algebraic Order in an Ising Model on a Scale-Free Hierarchical-Lattice Small-World Network”  
M. Hinczewski and A.N. Berker, *Phys. Rev. E* 73, 066126, 1-22 (2006).
111. “Field-Driven Hysteresis of the  $d=3$  Ising Spin Glass: Hard-Spin Mean-Field Theory”  
B. Yücesoy and A.N. Berker, *Phys. Rev. B* 76, 014417, 1-4 (2007).
112. “Quantum-Mechanically Induced Asymmetry in the Phase Diagrams of Spin-Glass Systems”  
C.N. Kaplan and A.N. Berker, *Phys. Rev. Lett.* 100, 027204, 1-4 (2008).
113. “Excitation Spectrum Gap and Spin-Wave Velocity of XXZ Heisenberg Chains: Global Renormalization-Group Calculation”  
O.S. Saryer, A.N. Berker, and M. Hinczewski, *Phys. Rev. B* 77, 134413, 1-10 (2008).
114. “High-Precision Thermodynamic and Critical Properties from Tensor Renormalization-Group Flows”  
M. Hinczewski and A.N. Berker, *Phys. Rev. E* 77, 011104, 1-6 (2008).
115. “Reentrant and Forward Phase Diagrams of the Anisotropic Three-Dimensional Ising Spin Glass”  
C. Güven, A.N. Berker, M. Hinczewski, and H. Nishimori, *Phys. Rev. E* 77, 061110, 1-7 (2008).
116. “Multicritical Points for the Spin Glass Models on Hierarchical Lattices”  
M. Ohzeki, H. Nishimori, and A.N. Berker, *Phys. Rev. E* 77, 061116, 1-11 (2008).
117. “Finite-Temperature Phase Diagram of Nonmagnetic Impurities in High-Temperature Superconductors using a  $d=3$  tJ Model with Quenched Disorder”  
M. Hinczewski and A.N. Berker, *Phys. Rev. B* 78, 064507, 1-5 (2008).
118. “The Blume-Emery-Griffiths Spin Glass and Inverted Tricritical Points”  
V.O. Özçelik and A.N. Berker, *Phys. Rev. E* 78, 031104, 1-5 (2008).
119. “Chaotic Spin Correlations in Frustrated Ising Hierarchical Lattices”  
N. Aral and A.N. Berker, *Phys. Rev. B* 79, 014434, 1-5 (2009).
120. “Strong Violation of Critical Phenomena Universality: Wang-Landau Study of the Two-Dimensional Blume-Capel Model under Bond Randomness”  
A. Malakis, A.N. Berker, I.A. Hadjiagapiou, and N.G. Fytas, *Phys. Rev. E* 79, 011125, 1-10 (2009).
121. “Quenched-Vacancy Induced Spin-Glass Order”  
G. Gülpınar and A.N. Berker, *Phys. Rev. E* 79, 021110, 1-4 (2009).

122. “Infinitely Robust Order and Local Order-Parameter Tulips in Apollonian Networks with Quenched Disorder”  
C.N. Kaplan, M. Hinczewski, and A.N. Berker, *Phys. Rev. E* 79, 061120, 1-5 (2009).
123. “Critical Percolation Phase and Thermal BKT Transition in a Scale-Free Network with Short-Range and Long-Range Random Bonds”  
A.N. Berker, M. Hinczewski, and R.R. Netz, *Phys. Rev. E* 80, 041118, 1-4 (2009).
124. “Frustrated Further-Neighbor Antiferromagnetic and Electron-Hopping Interactions in the  $d=3$  tJ Model: Finite-Temperature Global Phase Diagrams from Renormalization-Group Theory”  
C.N. Kaplan, A.N. Berker, and M. Hinczewski, *Phys. Rev. B* 80, 214529, 1-11 (2009).
125. “Wang-Landau Study of the 2d Random-Bond Blume-Capel Model”  
A. Malakis, A.N. Berker, I.A. Hadjiagapiou, and N.G. Fytas, *Physics Procedia* 3, 1443-1446 (2010).
126. “Trajectories with My Friends: Global Phase Diagrams plus High-Temperature Superconductivity and e-Supermarket Delivery Optimization”  
A.N. Berker, *Physica A* 389, 2867-2869 (2010).
127. “Uncovering the Secrets of the 2d Random-Bond Blume-Capel Model”  
A. Malakis, A.N. Berker, I.A. Hadjiagapiou, N.G. Fytas, and T. Papakonstantinou, *Physica A* 389, 2930-2933 (2010).
128. “Multicritical Points and Crossover Mediating the Strong Violation of Universality: Wang-Landau Determinations in the Random-Bond  $d = 2$  Blume-Capel Model”  
A. Malakis, A.N. Berker, I.A. Hadjiagapiou, N.G. Fytas, and T. Papakonstantinou, *Phys. Rev. E* 81, 041113, 1-11 (2010).
129. “Comment on Spin-Glass Attractor on Tridimensional Hierarchical Lattices in the Presence of an External Magnetic Field”  
A.N. Berker, *Phys. Rev. E* 81, 043101, 1-3 (2010).
130. “Tensor Renormalization Group: Local Magnetizations, Correlation Functions, and Phase Diagrams of Systems with Quenched Randomness”  
C. Güven, M. Hinczewski, and A.N. Berker, *Phys. Rev. E* 82, 051110, 1-7 (2010).
131. “Comment on Pumping of Confined Water in Carbon Nanotubes by Rotation-Translation Coupling”  
D.J. Bonthuis, C.N. Kaplan, D. Horinek, A.N. Berker, L. Bocquet, and R.R. Netz, *Phys. Rev. Lett.* 105, 209401 (2010).
132. “Theory and Simulations of Water Flow through Carbon Nanotubes: Prospects and Pitfalls”  
D.J. Bonthuis, K.F. Rinne, K. Falk, C.N. Kaplan, D. Horinek, A.N. Berker, L. Bocquet, and R.R. Netz, *J. Phys.: Condens. Matter* 23, 184110 (2011).
133. “Phase Separation and Charge-Ordered Phases of the  $d = 3$  Falicov-Kimball Model at Nonzero Temperature: Temperature-Density-Chemical Potential Global Phase Diagram from Renormalization-Group Theory”  
O.S. Sariyer, M. Hinczewski, and A.N. Berker, *Phys. Rev. B* 84, 205120, 1-13 (2011).
134. “Interface-Roughening Phase Diagram of the Three-Dimensional Ising Model for All Interaction Anisotropies from Hard-Spin Mean-Field Theory”  
T. Çağlar and A.N. Berker, *Phys. Rev. E* 84, 051129, 1-4 (2011).
135. “Universality Aspects of the  $d = 3$  Random-Bond Blume-Capel Model”  
A. Malakis, A.N. Berker, N.G. Fytas, and T. Papakonstantinou, *Phys. Rev. E* 85, 061106, 1-12 (2012).
136. “Deep Spin-Glass Hysteresis Area Collapse and Scaling in the  $d = 3 \pm J$  Ising Model”  
O.S. Sariyer, A. Kabakçioğlu, and A.N. Berker, *Phys. Rev. E* 86, 041107, 1-6 (2012).
137. “High  $q$ -State Clock Spin Glasses in Three Dimensions and the Lyapunov Exponents of Chaotic Phases and Chaotic Phase Boundaries”  
E. Ilker and A.N. Berker, *Phys. Rev. E* 87, 032124, 1-7 (2013).
138. “Overfrustrated and Underfrustrated Spin Glasses in  $d=3$  and 2: Evolution of Phase Diagrams and Chaos Including Spin-Glass Order in  $d=2$ ”  
E. Ilker and A.N. Berker, *Phys. Rev. E* 89, 042139, 1-11 (2014).
139. “Odd  $q$ -State Clock Spin-Glass Models in Three Dimensions, Asymmetric Phase Diagrams, and Multiple Algebraically Ordered Phases”  
E. Ilker and A.N. Berker, *Phys. Rev. E* 90, 062112, 1-7 (2014).



140. "Lower-Critical Spin-Glass Dimension from 23 Sequenced Hierarchical Models"  
M. Demirtaş, A. Tuncer, and A.N. Berker, Phys. Rev. E 92, 022136, 1-5 (2015).
141. "Successively Thresholded Domain Boundary Roughening Driven by Pinning Centers and Missing Bonds: Hard-Spin Mean-Field Theory Applied to  $d=3$  Ising Magnets"  
T. Çağlar and A.N. Berker, Phys. Rev. E 92, 062131, 1-4 (2015).
142. "Stepwise Positional-Orientational Order and the Multicritical-Multistructural Global Phase Diagram of the  $s=3/2$  Ising Model from Renormalization-Group Theory"  
Ç. Yunus, B. Renklioğlu, M. Keskin, and A.N. Berker, Phys. Rev. E 93, 062113, 1-9 (2016).
143. "The Chiral Potts Spin Glass in  $d=2$  and 3 Dimensions"  
T. Çağlar and A.N. Berker, Phys. Rev. E 94, 032121, 1-8 (2016).
144. "Devil's Staircase Continuum in the Chiral Clock Spin Glass with Competing Ferromagnetic-Antiferromagnetic and Left-Right Chiral Interactions"  
T. Çağlar and A.N. Berker, Phys. Rev. E 95, 042125, 1-8 (2017).
145. "Phase Transitions between Different Spin-Glass Phases and between Different Chaoses in Quenched Random Chiral Systems"  
T. Çağlar and A.N. Berker, Phys. Rev. E 96, 032103, 1-6 (2017).
146. "Maximally Random Discrete-Spin Systems with Symmetric and Asymmetric Interactions and Maximally Degenerate Ordering"  
B. Atalay and A.N. Berker, Phys. Rev. E 97, 052102, 1-5 (2018).
147. "A Lower Lower-Critical Spin-Glass Dimension from Quenched Mixed-Spatial-Dimensional Spin Glasses"  
B. Atalay and A.N. Berker, Phys. Rev. E 98, 042125, 1-5 (2018).

Preprints:

148. "Superfluid Weight, Free Carrier Density, and Specific Heat of the  $d=3$  tJ Model at Finite Temperatures"  
M. Hinczewski and A.N. Berker, [arXiv:cond-mat/0503631v1](https://arxiv.org/abs/cond-mat/0503631v1) [cond-mat.str-el] (2005).
149. "A Comparative Study of Interdisciplinarity in Sciences in Brazil, South Korea, Turkey, and USA"  
N. Yurdakul and A.N. Berker, [arXiv:1512.01420v2](https://arxiv.org/abs/1512.01420v2) [physics.soc-ph] (2015).

Scientific Citation Index citations to the above: 5688 as of 3/2017

Additionally, 37 articles have been published by undergraduate and graduate students in A.N. Berker's research group. List available on request.

A. Nihat Berker  
Invited Talks at Conferences

- "Phase Transitions in Gases Adsorbed onto Graphite and the Position-Space Renormalization-Group Method"  
15th Annual Meeting of the Society of Engineering Science, Gainesville, Florida (1978)
- "Phase Transitions in Graphite-Adsorbed Systems: Theory and Experiment"  
Greater Boston Statistical Mechanics Meeting (1978)
- "Epitaxial Ordering and Multicritical Phenomena in Adsorbed Monolayers: Renormalization Theory"  
March Meeting of the American Physical Society, Chicago (1979)  
Abstract: Bull. Am. Phys. Soc. 24, 324-325 (1979).
- "Phase Transitions in Adsorbed Systems and Potts Models"  
USA-USSR Condensed Matter Theory Workshop, Sevan, USSR (1979)
- "Commensurate Order, Multicritical Points, and Finite Sizes of Adsorbed Systems"  
International Conference on Ordering in Two Dimensions, Lake Geneva, Wisconsin (1980)
- "Adsorption and Potts Models"  
Nordita-Landau Institute Condensed Matter Theory Workshop, Copenhagen, Denmark (1980)
- "A Frustrated Spin-Gas Model for Doubly Reentrant Liquid Crystals"  
Nordita-Landau Institute Condensed Matter Theory Workshop, Göteborg, Sweden (1981)
- "Restructuring and Rescaling: Adlayer Transitions in Terms of Potts Lattice Gases, Helical Potts Models, etc."  
International Conference on Phase Transitions on Surfaces, Orono, Maine (1981)

- "Ordering in Adsorbed Systems and in Liquid Crystals: Competing Mechanisms"  
DOE Workshop on Future Trends in Condensed Matter Theory and the Role of Computation, Nantucket (1981)
- "Global Phase Diagrams with Order-Disorder and Structural Transitions: Renormalization-Group Approach"  
Annual Meeting of the Materials Research Society, Boston (1982)
- "Commensurate-Incommensurate Phase Diagrams from the Helical Potts Model"  
March Meeting of the American Physical Society, Dallas (1982)  
Abstract: *Bull. Am. Phys. Soc.* 27, 140 (1982).
- "First- and Second-Order Phase Transitions in Potts Models: Competing Mechanisms"  
3rd Joint Intermag-Magnetism and Magnetic Materials Conference, Montréal (1982)
- "Commensurate-Incommensurate Phase Diagrams from the Helical Potts Model"  
2nd International Symposium on the Statistical Mechanics of Adsorption, Trieste, Italy (1982)
- "Frustrated Spin-Gas Model for Doubly Reentrant Liquid Crystals"  
International Meeting on New Type of Ordered Phase, Kyoto, Japan (1982)  
Abstract: *J. Phys. Soc. Jpn.* 52 Suppl., 45 (1982).
- "Hierarchical Models and Chaotic Spin Glasses"  
Conference on Fractals in the Physical Sciences, National Bureau of Standards, Gaithersburg, Maryland (1983)
- "Spin-Glasses from Chaotic Renormalization Groups"  
3rd General Conference of the Condensed Matter Division, European Physical Society, Lausanne, Switzerland (1983)  
Abstract: *Europhys. Conf. Abs.* 7b, 93 (1983).
- "Frustration and Chaos in Spin-Glasses"  
Nordita-Landau Institute Condensed Matter Theory Workshop, Copenhagen, Denmark (1984)
- "Reentrant Melting of Krypton Adsorbed on Graphite and the Helical Potts-Lattice-Gas Model"  
March Meeting of the American Physical Society, Las Vegas (1986)  
Abstract: *Bull. Am. Phys. Soc.* 31, 570-571 (1986).
- "Annealed Frustration and Partial Bilayers in Dipolar Liquid Crystals"  
NATO Workshop on Incommensurate and Liquid Crystals, Boulder, Colorado (1986)
- "Random-Field Magnets and Spin-Glasses"  
60th Statistical Mechanics Meeting, Rutgers University (1988)
- "Bicritical Phase Diagram of Polar Liquid Crystals"  
Theoretical Physics Institute Workshop on the Nature of Phase Transitions in Liquid Crystals and Related Topics, Minneapolis, Minnesota (1988)
- "Renormalization-Group Theory of Phase Transitions on Surfaces and in Spin-Glasses"  
10th Annual Meeting of the Turkish Physical Society, Istanbul, Turkey (1988)
- "The Renormalization-Group Method and Phase Transitions in Condensed-Matter Systems"  
Annual Meeting of the the Scientific and Technical Research Council of Turkey, Ankara, Turkey (1988)
- "Magnetic System Critical Behavior Generated by Microscopic Impurities"  
NATO Advanced Study Institute on the Science and Technology of Nanostructured Magnetic Materials, Crete, Greece (1990)
- "Quenched Fluctuation Induced Second-Order Phase Transitions"  
March Meeting of the American Physical Society, Cincinnati (1991)  
Abstract: *Bull. Am. Phys. Soc.* 36, 439 (1991).
- "Absence of Temperature-Driven First-Order Phase Transitions in Systems with Random Bonds"  
5th Joint Magnetism and Magnetic Materials-Intermag Conference, Pittsburgh (1991)
- "Statistical Mechanics of Phase Transitions with a Hierarchy of Structures"  
Annual Meeting of the Materials Research Society, Boston (1991)
- "Microscopic Theory of Polar Liquid Crystals and Multiply Reentrant Phase Diagrams: I. Dipolar Interactions, Corrugation, and Permeation; II. Blockwise Interactions, Core Aspect Ratio, and Smectic C Ordering"  
Erice School on Phase Transitions in Liquid Crystals, Italy (1991)
- "Critical Behavior Induced by Quenched Disorder"  
18th International Conference on Thermodynamics and Statistical Mechanics, Berlin, Germany (1992)

"Complex Phase Transition Phenomena Due to Frustration and Quenched Randomness: I. New Critical and Multicritical Phenomena Induced by Quenched Random Bonds; II. Hard-Spin Mean-Field Theory III. Reentrances and Other Phenomena in Polar Liquid Crystals: A Microscopic Theory with Frustration" Summer School on Recent Developments in Statistical Physics, Istanbul, Turkey (1993)

"Hard-Spin Mean-Field Theory"

Topics in Statistical Physics Meeting, Antigonish, Nova Scotia, Canada (1993)

"Hard-Spin Mean-Field Theory"

70th Statistical Mechanics Meeting, Rutgers University (1993)

"Finite-Temperature Phase Diagram of the Three-Dimensional tJ Model of Electronic Conduction"

Istanbul Technical University Statistical Physics Days (1994)

"Quenched Randomness and Helium Mixtures in Porous Media"

Institute for Theoretical Physics Workshop on Vortex Phases, Santa Barbara (1994)

"Strong Violation of Universality under Quenched Randomness and Helium Mixtures in Aerogel"

Symposium on Quantum Fluids and Solids, Cornell (1995)

"Strong Violation of Universality under Quenched Randomness and Helium Mixtures in Aerogel"

International Meeting on Recent Advances in the Theory of Disordered Systems, Saclay, France (1995)

"Strong Violation of Universality"

Istanbul Technical University Statistical Physics Days (1996)

"Quenched Randomness: Strong Violation of Universality and Helium Mixtures in Aerogel"

March Meeting of the American Physical Society, Saint Louis, Missouri (1996)

Title: Bull. Am. Phys. Soc. 41, 218 (1996).

"Renormalization-Group Theory of an Electron Conduction Model with Explicit Quantum Mechanical Dynamics"

Workshop on Interface Dynamics and Non-Equilibrium Phase Transitions, TÜBİTAK Feza Gürsey Research Institute for Basic Sciences, Istanbul, Turkey (1998)

"Finite-Temperature Phase Diagram of the Hubbard Model of Electronic Conduction"

80th Statistical Mechanics Meeting, Rutgers University (1998)

"Phase Diagrams of Electronic Conduction Models from Renormalization-Group Theory"

IX. Regional Conference on Mathematical Physics, Istanbul, Turkey (1999)

"Renormalization-Group Theory in the Statistical Mechanics of Fluids"

3rd National Liquid-State Physics Symposium, Istanbul, Turkey (1999)

"Renormalization-Group Solution of Electronic-System Phase Diagrams"

18th Annual Meeting of the Turkish Physical Society, Adana, Turkey (1999)

"Complete Phase Diagram of the 3-d Hubbard Model"

March Meeting of the American Physical Society, Minneapolis, Minnesota (2000)

Abstract: Bull. Am. Phys. Soc. 45, 757 (2000).

"Finite-Temperature Phase Diagram of the tJ and Hubbard Models in d=3 from Renormalization-Group Theory"

21st IUPAP International Conference on Statistical Physics, Cancun, Mexico (2001)

"From tJ to Hubbard: an Excursion in Phase Diagram Space"

88th Statistical Mechanics Meeting, Rutgers University (2002)

"Trajectories and Phases for Friends and Electrons"

Conference in Honor of M. Hortaçsu, Istanbul Technical University (2003)

"Phase Diagrams, Superfluid Weights, and Thermodynamic and Conduction Properties of

Isotropic and Anisotropic Electronic Conduction Models at Finite Temperatures: Renormalization-Group Theory"

22nd Annual Meeting of the Turkish Physical Society, Bodrum, Turkey (2004)

"BCS and BEC Superconducting Phases, Superfluid Weights, and Carrier Densities of Electronic Conduction Models: Renormalization-Group Theory"

Istanbul Technical University Statistical Physics Days (2005)

"BCS and BEC Superconducting Phases, Superfluid Weights, and Carrier Densities of Electronic Conduction Models: Renormalization-Group Theory"

Erzurum Physics Days, Erzurum, Turkey (2005)

- “BCS and BEC Superconducting Phases, Superfluid Weights, and Carrier Densities of Electronic Conduction Models: Renormalization-Group Theory”  
III. National Superconductivity Symposium, Abant, Turkey (2005)
- “New Phases, Superfluid Weights, and Free Carrier Densities: Renormalization-Group Theory of Electronic Models”  
94th Statistical Mechanics Meeting, Rutgers University (2005)
- “Superconducting Phases, Superfluid Weights, and Carrier Densities in Electronic Lattice Models”  
Conference in Honor of M. Tomak, Middle East Technical University (2005)
- “Personalities, Scales, and Electrons”  
Erdal İnönü Days, Bosphorus University (2006)
- “Strong Friendships and Strongly Correlated Electrons”  
Conference in Honor of İ.H. Duru, Izmir High Technology Institute (2006)
- “New Phases, Superfluid Weights, Free Carrier Densities, Impurity Effects: Renormalization-Group Theory of the tJ and Hubbard Models”  
2nd Bilateral Workshop on Solid State and Materials Chemistry, Dresden, Germany (2006)
- “Ab Initio Enthusiasm and High Principles Physics”  
Conference in Honor of J.D. Joannopoulos, Massachusetts Institute of Technology (2007)
- “Frustration and Chaos in Spin Glasses”  
Workshop on Disordered Systems: Theory and Application, Izmir (2007)
- “Quantum Surprises: Cross-Component Spin Correlations, Spin-Glass Ferromagnetism, and Superconductor/Antiferromagnet Reverse Impurity Effects”  
14th Ankara Condensed Matter Physics Meeting, Hacettepe University (2007)
- “Thermal/Geometrical Crossovers, Inverted KBT Transitions, and Local Order-Parameter Tulips: Renormalization-Group Studies of Networks with Quenched Disorder”  
Workshop on Complex Systems, Seoul National University, Korea (2008)
- “Quantum Surprises: Cross-Component Correlations, Spin-Glass Ferromagnetism, and Reverse Impurity Effects on Superconductor and Antiferromagnetic Phases”  
3rd Bilateral Workshop on Novel Materials, Istanbul (2008)
- “In the Steps of Erdal İnönü: To Gather Speed and to Take Off”  
Conference in Memory of Erdal İnönü, Istanbul (2008)
- “Phase Diagrams of the d=3 Electronic Conduction Models with Frozen Impurities: Renormalization-Group Calculations”  
Summer School in Mathematical Physics: Rigorous Result in Statistical Mechanics and Quantum Field Theory, Istanbul (2008)
- “Phase Diagrams of the d=3 tJ Electronic Model with Frozen Nonmagnetic Impurities, with Application to High-Temperature Superconductivity: Renormalization-Group Theory”  
International Conference on Superconductivity and Magnetism, Antalya (2008)
- “Theory of High-Temperature Superconductivity and Research-Focussed Education”  
Academy of Sciences of Turkey Ankara Group, Ankara (2008)
- “Inverted Tricritical Phenomena and Apollonius Tulips: Ordering in Disordered Media”  
26th International Physics Conference, Turkish Physical Society, Muğla (2009)
- “Water: Its Physics, Nanophysics, Chemistry, and Geopolitics”  
13th National Liquid-State Physics Symposium, Istanbul, Turkey (2009)
- “University Undergraduate Education with Focus on Research”  
University Dilemmas and Solution Paths, Erciyes University, Kayseri (December 2009)
- “Inverted Tricritical Phenomena and Apollonius Tulips: Ordering in Disordered Media”  
17th Statistical Physics Days, Istanbul (2010)
- “Earth’s Currents and Clouds, Jupiter and Saturn’s Ice Moons”  
17th Statistical Physics Days, Istanbul (2010)

- “Education with Focus on Research and Outreach:  
Augmented Mechanics, MIT, Necati Cumalı, and Superconductivity with Zinc”  
Bilkent/UNICEF, Ankara (2010)
- “Academic Career”  
Istanbul Technical University Human Resources Summit (2010)
- “Undergraduate Education with Focus on Research”  
10th American Society of Mechanical Engineers Conf. on Engineering Systems Design & Analysis, Istanbul (2010)
- “Anisotropy Effects and Impurity Induced Antiferromagnetism:  
Renormalization-Group Theory of  $d=3$  Electronic Models”  
103rd Statistical Mechanics Meeting, Rutgers University (2010)
- “Thermal/Geometrical Crossovers, Inverted KBT Transitions, and Local Order-Parameter Tulips in  
Scale-Free Networks with Quenched Disorder”  
Workshop on Crystallization and Melting in Two Dimensions, Budapest (2010)
- “Earth’s Currents and Clouds, Jupiter and Saturn’s Ice Moons”  
Water: Its Nanophysics and Biochemistry Workshop, Aghia Giorgi, Prince’s Island, Istanbul (2010)
- “Warm Friendships, Frozen Spin Glasses: Achievements of Renormalization-Group Theory,  
Including Ankara Basketball and Apollonian Tulips”  
Conference in Honor of E. Yurtsever, Koç University (2010)
- “Multicultural Science Physics Meets at the World Cultural Capital Istanbul: Roundtable of Physicist Rectors”  
Chairperson and speaker, 27. International Physics Conference, Turkish Physical Society, Istanbul (2010)
- “Alcibiades and Philoctetes: Individual’s Talents and Rights in Oligarchical Societies”  
Academy of Sciences of Turkey Ankara Group, Ankara (2010)
- “Talent and Jealousy on Water: Admiral Alcibiades and his Oligarchical Environment”  
14th National Liquid-State Physics Symposium, Edirne (2010)
- “Frozen Impurity and Localized/Delocalized Electron Effects in Electronic Models: Renormalization-Group Theory”  
14th National Liquid-State Physics Symposium, Edirne (2010)
- “Relations between Foundation Universities and the Higher Education Council”  
Workshop on Upper Administration Problems in Higher Education and Solution Pathways, Academy of Sciences of  
Turkey (2010)
- “Education with Focus on Research and Outreach”  
8th Good Examples in Education Conference, Sabancı University (2011)
- “Education with Focus on Research and Outreach”  
1. National High School Debate Championship of the Town of Tuzla (2011)
- “Robustness, Beauty, and Fragility in the Random Scale-Free World:  
Apollonius Tulips and Critical Percolation Phases”  
Imperial College London - Feza Gürsey Institute International Summer School and Research Workshop on Complexity,  
Istanbul (2011)
- “University Preparation for the Real World”  
4th National University-Industry Cooperation Platform Congress, Izmir (2011)
- “Universities and the Future of Information Management”  
10. Eskişehir Quality Fest, Eskişehir (2011)
- “Education with Focus on Research and Outreach”  
15th National Liquid-State Physics Symposium, Piri Reis University, Tuzla (2011)
- “People, Education, Universities”  
10. Industry Congress of the Istanbul Chamber of Industry (2011)
- “Phase Separation and Charge-Ordered Phases in Electronic Conduction Models:  
Temperature-Density-Chemical Potential Phase Diagrams from Renormalization-Group Theory”  
International Conference on Superconductivity and Magnetism, Istanbul (2012)

- “An Ease of Achievements in Mutual Familiarization, Understanding, and Progress: Turkish, German, and British Scientific Collaborations”  
Keynote Speech, Triangle of Knowledge: Turkish, German, and British Science and Technology Collaborations, UK Science & Innovation Network and Alexander von Humboldt Foundation, British Embassy Berlin (2012)
- “Education with Focus on Research and Outreach”  
8. National Congress of Physics Students, Sakarya (2012)
- “Entrepreneurship and Sensitivity in Education”  
Symposium of Educating-Self-Educating Teachers, Enka Schools, Adapazarı (2012)
- “High q-State Clock Spin Glasses in Three Dimensions and the Lyapunov Exponents of Chaotic Phases and Chaotic Phase Boundaries”  
International Workshop on Critical Behavior in Lattice Models, Beijing (2013)
- “High q-State Clock Spin Glasses in Three Dimensions and the Lyapunov Exponents of Chaotic Phases and Chaotic Phase Boundaries”  
International Conference on High Energy and Mathematical Physics in Honor of M. Arık, Bosphorus University (2013)
- “High q-State Clock Spin Glasses in Three Dimensions and the Lyapunov Exponents of Chaotic Phases and Chaotic Phase Boundaries”  
Francqui Symposium “Fluctuation-Induced Phenomena” in honor of M. Kardar, Katholieke Universiteit Leuven, Belgium (2013)
- “Academia, Knowledge, Enlightenment, and Friendship: The German – Turkish Progress”  
Turkey Focus Initiative of the Alexander von Humboldt Foundation and the Joachim Herz Foundation, German Embassy, Ankara (2013)
- “Education Focussed on Research, the Individual, and Success”  
Physics and Innovative Technologies Symposium, Recep Tayyip Erdoğan University, Rize (2014)
- “Internationalization Experiences at the National Level”  
Community of Mediterranean Universities Workshop, Ondokuz Mayıs University, Samsun (2014)
- “Order in the Presence of Frozen Disorder and Controlled Chaos in Spin Glasses”  
Humboldt Kolleg German-Turkish Cooperation in Physics: New Challenges in Science Conference, Ankara (2014)
- “Cross-Cultural Academic Engagements, Collaborations, and Results: Mentoring and Metrics”  
TÜBA-ERC-TÜBİTAK Conference “Excellence in Science: ERC Enables Young Researchers”, Istanbul (2014)
- “Education Focussed on the Individual and Success”  
Academy of Sciences of Turkey Istanbul Group, Istanbul (2014)
- “Frustration and Chaos, Critical Phases and Critical Dimension in Spin Glasses”  
5. Physics Workshop of the Istanbul University Physics Club (2015)
- “Au Lendemain des Élections Législatives en Turquie”  
Fondation Jean Jaurès Workshop, Paris (2015)
- “Global Turkey in Europe: Concluding Remarks”  
Istituto Affari Internazionali – Stiftung Mercator – Istanbul Policy Center Conference, Berlin (2015)
- “Gender Studies in Universities and Society and Addressing/Eliminating Cultural Barriers”  
Workshop on Women in Higher Education and Research, Community of Mediterranean Universities, Trabzon (2015)
- “Education, Years, and Friendship”  
MIT Alumni in Turkey Year-End Meeting, Istanbul (2015)
- “Controlled Frustration and Chaos, Critical Phases, and Lower-Critical Dimension in Spin Glasses”  
5th International Conference on Superconductivity and Magnetism, Fethiye (2016)
- “Controlled Frustration and Chaos, Critical Phases, Lower-Critical Dimension in Spin Glasses and Chiral Spin Glasses”  
12th International Workshop on Magnetism and Superconductivity at the Nanoscale, Barcelona (2016)
- “Chiral Spin-Glass Phases, Fibrous Microentrances, Nano-Controlled Frustration, Multiple Chaos, and Hollywood Goes to Statistical Mechanics”  
20th National Liquid-State Physics Symposium, Piri Reis University, Tuzla (2016)
- “Manipulated Frustration, Multiple Chaos, and Critical Phases in Spin Glasses”  
116th Statistical Mechanics Meeting, Rutgers University (2016)

“Outside Evaluation Process Experiences”

Board of Higher Education Institutional Outside Evaluator Education Workshop (2016)

“Phase Transitions between Different Spin-Glass Phases and between Different Chaoses in Quenched Random Chiral Systems”

34th International Physics Conference, Turkish Physical Society, Bodrum (2017)

“Insistence and Success in Academic Life: Sciences, Engineering, Social Sciences, Administration”

Career Summit 2017, Gedik University, Istanbul (2017)

“Receiving and Providing Education, Career Success”

Pole Star II IEEE Conference, Yıldız Technical University (2017)

“Due Diligence and Responsibility in Academia and Everywhere Else”

11. Traditional International Mirror Conference Statistical and Condensed Matter Physics – Social Responsibility, Kadir Has University (2017)

“Spin Glasses, Renormalization Group, and Phase Transitions between Chaoses”

8. Physics Workshop, Istanbul University (2018)

“Importance of Social Sciences for Engineers and Scientists”

Social Sciences Workshop, Prof. Dr. Mümtaz Tarhan Social Sciences High School (2018)

“Education, Research, Success: In High School and University”

3. Beşiktaş Career Days, Istanbul (2018)

“Education, Research, Success, and Happiness”

Feyziye Schools Foundation Cultural Conferences (2018)

“New (Chiral) Spin Glass and Phase Transitions between Chaoses”

Interscholastic Physics Students’ Summit of Istanbul Technical University, Middle East Technical University, and Boğaziçi University, Istanbul (2018)

“Academic Entrepreneurship and Effectiveness, Team Work and Success”

The Great Get-Together ‘18: Mega Trends, Economy and Management Club, Sabancı University (2018)

“Education in English at Universities? and Always Unrelenting Success”

Use of English as Education Language at Universities: A Holistic Approach Workshop, Kadir Has University (2018)

“Physics, Literature, Student/Teacher Motivation, Success, and Happiness”

Teachers’ Professional and Personal Development Workshop, Üsküdar District National Education Directorship (2018)

**“Simone de Beauvoir and Social Consciousness Taught by a Physicist Engineering Dean”**

**Gender and Education Conference, Sabancı University, Istanbul (2018)**

“Simone de Beauvoir and the Devil’s Staircase”

Hindsights and Foresights in Statistical Physics: A Symposium in Honour of Joseph Debye and Carlo Vanderzande on Occasion of Their 60<sup>th</sup> Anniversary, KU Leuven (2018)

“The CPS Phenomenon: Helicity (Chirality) Propelled Science and Friendship”

Fascination with Fluctuations, Correlations, and Disorder: Symposium in Honor of Mehran Kardar, MIT (2018)

“All-Temperature Ordering in Maximally Random Systems, Lower Lower-Critical Spin-Glass Dimension, and Continuously Variable Physical Dimension”

120th Statistical Mechanics Meeting, Rutgers University (2018)

1. International Symposium on Graduate Research in Science, Istanbul University (2018).

In addition to the 129 invited conference talks listed above, number of contributed papers to conferences: 177

Also, ANB gave outside his university: 362 invited colloquia and seminars in 1978-18. Most recently:

“Yüksek Sıcaklık Süperiletkenli Faz Diyagramları, Süperakışkanlık Yoğunluğu ve Ağır Fermiyonlar: Mikroskopik Renormalizasyon Grubu Kuramı”

[197] Balıkesir University, 22 October 2004

[198] TÜBİTAK Feza Gürsey Institute, 11 November 2004

[199] Boğaziçi University, 24 November 2004

[200] Sabancı University, 7 December 2004

[202] Erciyes University, 17 December 2004

“Bir Üniversite Nasıl Olmalıdır?”

[203] TOBB Economy and Technology University, 24 February 2005

“Italo Calvino, J.-P. Sartre, Oryantalizm, G. Vızıyenos: Mühendishanede bir Fenci Toplumbilim Okutuyor”

[201] Sabancı University, 7 December 2004

[206] Koç University, 26 April 2005

“Phase Diagrams with Two Superconducting Phases, Superfluid Weights and Free Carrier Densities: Renormalization-Group Theory of Electronic Conduction Models”

[204] Saclay Research Center, Paris, 5 April 2005

[205] Koç University, 21 April 2005

[208] ETH Zürich, 12 May 2005

[209] München Technical University, 13 May 2005

“İki Tür Süperiletkenli Faz Diyagramları, Serbest Taşıyıcı ve Süperakışkanlık Yoğunluğu: Mikroskopik Renormalizasyon Grubu Kuramı”

[207] Eskişehir Anadolu University, 6 May 2005

“New Phases, Superfluid Weights, and Free Carrier Densities: Renormalization-Group Theory of Electronic Conduction Models”

[210] École Normale Supérieure, Paris, 27 October 2005

[211] University of California, Santa Barbara, 1 November 2005

[212] Stanford University, 3 November 2005

“New Phases, Superfluid Weights, Free Carrier Densities, Impurity Effects: Renormalization-Group Theory of the tJ and Hubbard Models”

[213] Ohio State University, 6 March 2006

[214] University of Michigan, 9 March 2006

[215] Boston University, 6 April 2006

“Renormalization-Group Solution of Electronic Models and High  $T_c$  Superconductivity”

[216] Black Sea Technical University, 14 April 2006

“Renormalization-Group Theory of  $d=3$  Electronic Systems Including Quenched Random Impurities: Phase Diagrams, Superconductivity, and Antiferromagnetism”

[217] Tokyo Institute of Technology, 17 October 2006

[219] Tohoku University, 24 October 2006

[220] Tokyo University, 25 October 2006

[221] Tokyo Science University, 26 October 2006

[223] Bilkent University, 11 December 2006

[230] University of Athens, 21 June 2007

“Exact Renormalization-Group Theory on Hierarchical Lattices with Applications to Quenched Random Systems”

[218] Tokyo Institute of Technology, 19 October 2006

[222] Kyushu University, 27 October 2006

[232] University of Athens, 27 June 2007

“Phase Transitions, Renormalization-Group, Electronic Systems, and Small-World Networks”

[224] Erzurum Atatürk University, 10-12 January 2007 (An intensive course of 10 hours, completed by 102 students)

[226] Kayseri Erciyes University, 9-12 March 2007 (An intensive course of 21 hours, completed by 23 students)

[233] TÜBİTAK Feza Gürsey Institute, 8-19 July 2007 (An intensive course of 54 hours, completed by 46 students)

[247] TÜBİTAK Feza Gürsey Institute, 13-24 July 2008 (An intensive course of 54 hours, 66 students accepted)

“Italo Calvino, J.-P. Sartre, Oryantalizm, G. Vızıyenos: Mühendishanede bir Fencinin Toplumbilim Dersleri”

[227] Bosphorus University, Western Languages Dept. and Physics Dept. Joint Seminar, 19 April 2007

“From Z to Electronic System Phase Diagrams and Metropolitan Istanbul Logistics”

[228] Istanbul University Kortel Seminars, 11 May 2007

[229] National Institute of Standards, Gebze, 14 May 2007

“Phase Transitions and Renormalization-Group Theory”

[231] University of Athens, 25-27 June 2007 (Lectures, 6 hours)

“Ord. Prof. Dr. Ratip Berker and his Code”

[234] Istanbul Technical University School of Mechanical Engineering, 30 November 2007

[236] Işık University, 20 February 2008

[242] Istanbul Mathematical Society Karaköy Seminars, 5 May 2008

“Quantum Surprises: Cross-Component Spin Correlations,

Spin-Glass Ferromagnetism, and Superconductor/Antiferromagnet Reverse Impurity Effects”



- [235] Işık University, 20 February 2008
- [243] Yıldız Technical University, 22 May 2008
- [246] Münich Technical University, 27 June 2008
- [249] University of Athens, 14 November 2008
- “Sciences, Engineering, and Social Sciences in Higher Education”
- [225] ITU Ekrem Elginkan High School, 22 January 2007
- [237] Üsküdar American High School, 26 March 2008
- [238] Robert Kolej High School, 26 March 2008
- [240] Galatasaray High School, 18 April 2008
- [241] Getronagan High School, 30 April 2008
- [245] TEV Inanç Türkeş High School, 16 June 2008
- [250] Zoğrafyon High School, 26 November 2008
- [264] Kayseri Science High School, 22 October 2009
- “High-Temperature Superconductivity Theory and Education with Focus on Research”
- [239] Istanbul Technical University, 16 April 2008
- [244] Yıldız Technical University, 22 May 2008
- [257] Chamber of Physics Engineers, Kadıköy, 13 March 2009
- [259] Hacettepe University, 16 April 2009
- “Augmented Mechanics”, an intensive course of 54 hours for high school students
- [248] TÜBİTAK F. Gürsey Institute, 17-28 August 2008 (Registered by 100 students from 25 high schools)
- [262] TÜBİTAK F. Gürsey Institute, 12-23 July 2009 (Registered by 120 students from 65 high schools)
- [284] TÜBİTAK F. Gürsey Institute, 4-15 July 2010 (Registered by 130 students from 79 high schools)
- “Renormalization-Group Theory of  $d=3$  Electronic Systems with Spatial Anisotropy and Quenched Random Impurities”
- [251] Seoul National University, 23 December 2008
- “Quantum Asymmetry, Inverted Tricritical Points, and Quenched-Vacancy-Induced Random Order in Spin Glasses”
- [252] Korea Institute for Advanced Study, 26 December 2008
- [253] Münich Technical University, 19 January 2009
- [254] University of Mainz, 2 February 2009
- [255] University of Oldenburg, 5 February 2009
- “Thermal/Geometric Crossovers, Inverted KBT Transitions, and Local Order-Parameter Tulips”
- [256] Münich Technical University, 9 February 2009
- “High Temperature Superconductivity, Education with Focus on Research, Nano Water”
- [258] Robert Kolej High School, 26 March 2009
- [260] Koç University, 22 April 2009
- “Inverted Tricriticality and Apollonian Tulips: New Results on Quenched Randomness”
- [261] Saclay Research Center, Paris, 27 April 2009
- [270] Universidad Complutense de Madrid, 5 February 2010
- “Education with Focus on Research”
- [263] Kayseri Erciyes University, 22 October 2009
- [265] Istanbul University, 3 December 2009
- [266] Kadir Has University, 10 December 2009
- [267] Marmara University, 13 January 2010
- [268] Okan University, 19 January 2010
- [276] Doğuş University, 16 April 2010
- [281] Yonca-Onuk Shipyard, 2 June 2010
- “Anisotropy Effects and Impurity Induced Antiferromagnetism: Renormalization-Group Theory of  $d=3$  Electronic Models”
- [269] Leipzig University, 29 January 2010
- [272] Beijing Normal University, 12 March 2010
- [273] Hong Kong University of Science and Technology, 15 March 2010
- “Inverted Tricriticality and Apollonian Tulips in A Plenitude of Exactly Soluble Statistical Mechanics with Quenched Randomness”
- [271] Institute of Physics Chinese Academy of Sciences, 11 March 2010
- [274] University of Athens, 26 March 2010
- [278] University of Rome, 24 May 2010
- [288] Université Paris-Sud, 15 October 2010

- [290] Oxford University, 28 October 2010  
 “Education with Focus on Research and Communication: Augmented Mechanics, MIT, Necati Cumalı, and Superconductivity with Zinc”
- [275] Ankara Science High School, 7 April 2010
- [289] Rotary Club of Şişli, Istanbul, 19 October 2010  
 “Education with Focus on Research and Communication”
- [277] Tekirdağ Namık Kemal University, 5 May 2010
- [279] Sivas Cumhuriyet University, 27 May 2010
- [291] Hisar High School, 24 November 2010  
 “Inverted Tricriticality and Apollonian Tulips: Ordering in the Presence of Frozen Disorder”
- [280] Sivas Cumhuriyet University, 28 May 2010
- [285] TÜBİTAK Feza Gürsey Institute, 4 August 2010  
 “From High School to University: Responsive Education with Focus on Research”
- [282] Adapazarı Enka Anadolu High School, 10 June 2010  
 “Graduation Speech”
- [283] Robert College High School, 28 June 2010
- [302] Irmak High School, 29 July 2011  
 “Electronic Systems Phase Diagrams and Impurity Effects: Renormalization-Group Theory”
- [286] TÜBİTAK Feza Gürsey Institute, 16 August 2010  
 “Inverted Tricriticality, Apollonian Tulips, and Strong Violation of Universality: Ordering Phenomena Enriched by Frozen Disorder”
- [287] Istanbul Technical University, 1 October 2010
- [293] Istanbul University, 9 December 2010
- [295] University of Wuerzburg, 12 January 2011
- [297] Kayseri Erciyes University, 21 February 2011  
 “Alcibiades ve Philoctetes: Individual’s Talents and Rights in Oligarchical Societies”
- [292] Istanbul Technical University, 6 December 2010
- [320] Doğuş University, 10 April 2013  
 “Education with Focus on Research and Outreach”
- [294] Tuzla Township High Schools, 10 December 2010
- [296] Irmak High School, 18 January 2011
- [298] Robert College High School, 24 February 2011
- [299] Marmara University Institute of Neurological Sciences, 8 April 2011
- [300] Üsküdar American High School, 14 April 2011
- [301] Kocaeli University, 3 May 2011
- [303] Higher Education Council, Ankara, 21 September 2011
- [306] Konya Selçuk University, 30 November 2011
- [307] Bahçeşehir College Kocaeli High School, 28 December 2011
- [308] Turkish Naval Academy, 10 January 2012
- [313] Dokuz Eylül University, 12 April 2012
- [314] Abdullah Gül University, 19 April 2012
- [315] Uşak National Education Directorate, 1 June 2012
- [316] Şehir University, 8 November 2012
- [317] İzmir High Technology Institute, 20 December 2012
- [318] Tuzla Municipality High School University, 15 January 2013  
 “Travails and Travailles of a Reverse-Brain-Drainer: 12 Years in Istanbul, after 24 Years at MIT”
- [304] Massachusetts Institute of Technology, 20 October 2011  
 “Impurity Effects, Charge Ordering, and Phase Separation in Electronic Systems”
- [305] Free University of Berlin, 7 November 2011
- [312] Northwestern University, 5 April 2012  
 “Research and Outreach Underpinnings for Sustainable and Competitive Education”
- [309] Chamber of Mechanical Engineers, Denizli, 8 February 2012  
 “Inverted Tricriticality and Apollonian Tulips: Contributions of Frozen Disorder to Disorder and the Plenitude of Exactly Soluble Interesting Systems in Statistical Mechanics”
- [310] Doğuş University, 16 February 2012  
 “Quantum Repulsion in Electronic Systems: Sublattice Separation and Charge Ordering in the Absence of Interaction”
- [311] Istanbul Technical University, 23 March 2012

“Sensitivity, Outreach, Competitiveness, and Vertical Integration in Education with a Focus on Research ”

[319] Thrace University, Edirne, 6 March 2013

“Education, Entrepreneurship, Life”

[321] Fulya Turkuaz Rotary Club, 17 September 2013

“Academic Entrepreneurship: Research and Student-Focused Vertical Education”

[322] Eskişehir Anadolu University, 7 March 2014

[323] Abdullah Gül University, 12 March 2014

“Person-Focused and Entrepreneurial Education/Research”

[324] Kadir Has University, 24 April 2014

“Entrepreneurship, Success, and Happiness in Academic Life”

[325] Gedik University, 25 September 2014

“Education with Focus on Research and Individual”

[326] Mersin University, 8 December 2014

“Entrepreneurial Education and Research with Focus on the Individual”

[327] Istanbul Culture University, 11 December 2014

“The Inevitability of Literature and Social Sciences in Education and in All of Life”

[328] Erenköy Işık High School, 17 December 2014

“Education and Success”

[329] Üsküdar American Academy, 21 January 2015

[330] Dilovası Enka Technological Anatolian High School, 12 February 2015

[340] Anakent College, 9 November 2015

“Controlled Frustration and Chaos, Critical Phases, and Lower-Critical Dimension in Spin Glasses”

[331] Istanbul Technical University, 13 March 2015

[332] Marmara University, 27 March 2015

[333] Koç University, 11 May 2015

[334] Coventry University, 3 June 2015

[341] Bilkent University, 2 December 2015

“Education and Success in Turkey and abroad”

[335] Robert College High School, 17 June 2015

“Closing Speech”

[336] Emine Durukanoğlu Summer Program for Primary School Students, Kılavuzköy Village, Of, 23 August 2015

“Research, Education, Empathy”

[337] Işık University, 7 September 2015

[339] Acıbadem University, 3 November 2015

[342] Bilkent Erzurum Laboratory School, 19 February 2016

[347] Sakıp Sabancı High School, 11 and 18 April 2017

“Physics, Empathy, Success”

[338] Kartal Anadolu İmam Hatip High School, 2 October 2015

“Chiral Spin-Glass Phases, Fibrous Microentrances, Nano-Controlled Frustration, Multiple Chaos, and Hollywood Goes to Statistical Mechanics”

[343] Bilkent University, 14 December 2016

[344] University of Crete, 23 February 2017

[345] Yıldız Technical University, 15 March 2017

[346] Massachusetts Institute of Technology, 3 April 2017

[348] Istanbul University, 14 April 2017

“Chateaubriand, Simone de Beauvoir, MIT, and Augmented Mechanics: Education and Research across 3 Cultures”

[349] Galatasaray University, 29 November 2017

“Entrepreneurship, Success, and Happiness in Academic Life”

[350] MEV Basınköy Anadolu High School, 6 December 2017

“New (Chiral) Spin Glass and Phase Transitions between Chaoses”

[351] Boğaziçi University, 20 December 2017

“Person-Centered Education, Research, Success”

[352] German High School, 15 January 2018

[355] Kadıköy Anatolian High School, 7 March 2018

“Challenged Comfort Zones, Entrepreneurial Education, Success, and Happiness”

[353] İstanbul (Boy’s) High School, 16 January 2018

“Fantasy, Reality, Science, Society”

[354] Rector’s Current Science Conference, Yaşar University, 9 February 2018

“Education, Happiness, Success”

[356] Egean High School, 30 March 2018

[357] Yaşar Acar Science High School, 2 May 2018

[358] Bahçeşehir College, 3 May 2018

[359] Kadıköy Atatürk Science High School, 9 May 2018

[360] Çapa Science High School, 17 May 2018

[361] Avcılar District National Education Directorate, 11 September 2018

“Education, Research, High Success, Happiness”

[362] Bartın University School Year Opening Class, 8 October 2018

The **1 August 2010 issue of the scientific journal Physica A** has been dedicated to A.N. Berker for his 60th birthday (*Physica* **389** (15) 2865-3012 (2010)). This 157-page book contains, in addition to information on Berker’s career and achievements, photographs and map of Istanbul and Kadıköy, research articles on statistical, condensed matter, fluid, and biological physics by D.P. Aalberts, M. Aizenman, D. Andelman, M.C. Dökmeci, S. Durukanoğlu, M.E. Fisher, C. Güven, R.B. Hallock, S. Havlin, M. Hinczewski, J.O. Indekeu, A. Kabakçioğlu, C.N. Kaplan, M. Kardar, M. Kaufman, D.P. Landau, J.L. Lebowitz, A. Malakis, J.F. Marko, S.R. McKay, D. Mukamel, R.R. Netz, H. Nishimori, M. Ohzeki, H. Orland, E. Orlandini, S. Östlund, J.A. Plascak, O.S. Sarıyer, H.E. Stanley, R.H. Swendsen, Y. Şengün, and others. This book is based on the Berker-Fest conference organized at MIT on October 17, 2009.

The Berker-Fest organized at Istanbul Technical University on November 14-15, 2009 is reflected in another book: the 130-page book “**Studies in Science, the Individual, and Society: A Memorial Book**” (ISBN 978-605-4348-21-3). This interdisciplinary book contains articles by M. Şahin, Y. Yılmaz, Ö. Pekcan, İ.H. Duru, A.N. Aliev, M.Y. Şengül, M.C. Güçlü, Z. Aycan, B. Karaçam, R. Reid, A. Oğuz, S.A. Uysal, E. Yurtsever, İ. Yılgör, E. Yılgör, A. Sevgen, F.B. Erim Berker, M. Keskin, M. Ertaş, A. Alpar, Y. Şengün, S. Durukanoğlu, S. Erkan, H. Özbek, S. Yıldız, Ö.F. Dayı, O.T. Turgut, and C. Saçlıoğlu.

Some of the Invited Talks at Conferences Given by Junior Collaborators on Joint Work with ANB

"The Frustrated Spin-Gas Model for Doubly Reentrant Liquid Crystals"

J.S. Walker, Gordon Conference on Liquid Crystals, New Hampshire (1983)

"Chaotic Spin Glasses: An Upper Critical Dimension"

S.R. McKay, 29th Annual Conference on Magnetism and Magnetic Materials, Pittsburgh, Pennsylvania (1983)

"Reentrant Liquid Crystal Phases in Systems of Polar Molecules"

J.O. Indekeu, Liquid Crystal Days Conference, Leuven, Belgium (1984)

"Molecular Tail Lengths, Dipole Pairings, and Multiple Reentrance Mechanisms of Liquid Crystals"

J.O. Indekeu, 16th International Conference on Thermodynamics and Statistical Mechanics, Boston (1986)

"Equimagnetization Lines in the Hybrid-Order Phase Diagram of the  $d=3$  Random-Field Ising Model"

S.R. McKay, 4th Joint Intermag-Magnetism and Magnetic Materials Conference, Vancouver, Canada (1988)

"Hybrid-Order Phase Transition and Intermediate-Critical Dimension of the Random-Field Ising Model"

S.R. McKay, New Trends in Magnetism Meeting, Recife, Brazil (1989)

"Phase Transitions on Semiconductor Surfaces"

O.L. Alerhand, 20th International Conference on the Physics of Semiconductors, Thessaloniki, Greece (1990)

"Finite-Temperature Phase Diagram of Vicinal Si(100) Surfaces"

O.L. Alerhand, Winter Epitaxy Workshop, Obertraun, Austria (1990)

"Finite-Temperature Equilibrium Properties of Steps on Si(100) Surfaces"

O.L. Alerhand, March Meeting of the American Physical Society, Cincinnati (1991)

Abstract: *Bull. Am. Phys. Soc.* **36**, 587 (1991).

“Renormalization-Group Calculation of Local Magnetizations and Correlations: Random-Bond, Random-Field, and Spin-Glass Systems”

D. Yeşilten, Istanbul Technical University Statistical Physics Days (1997)

Some of the Invited Talks at Conferences Given by Junior Collaborators on Joint Work with ANB, continued

“Renormalization-Group Study of Helium Mixtures Immersed in a Porous Medium”

A. Lopatnikova, March Meeting of the American Physical Society, Los Angeles (1998)

Abstract: Bull. Am. Phys. Soc. 43, 515 (1998).

“Renormalization-Group Calculation of Local Magnetizations and Correlations:  
Random-Bond, Random-Field, and Spin-Glass Systems”

D. Yeşiltepe, March Meeting of the American Physical Society, Los Angeles (1998)

Abstract: Bull. Am. Phys. Soc. 43, 835 (1998).

“Hard-Spin Mean-Field Theory: A Self-Consistent Theory for Fluctuation-Dominated Systems”

A. Kabakçıoğlu, Istanbul Technical University Statistical Physics Days (1999)

“Sequential Phase Transitions in Liquid Crystals: A Photon Transmission Study”

H. Özbek, Istanbul Technical University Statistical Physics Days (2000)

“Renormalization-Group Theory of Electronic Conduction Models”

M. Hinczewski, Istanbul Technical University Statistical Physics Days (2003)

“Critical Behavior of Liquid Crystals via the Optical Transmission Method”

S. Yıldız, Istanbul Technical University Statistical Physics Days (2003)

“Phase Diagrams and Crossover in Spatially Anisotropic  $d=3$  Ising, XY Magnetic and Percolation Systems:  
Exact Renormalization-Group Solutions of Hierarchical Models”

A. Erbaş, 2nd Bilateral Workshop on Solid State and Materials Chemistry, Dresden, Germany (2006)

“Renormalization-Group Theory of  $d=3$  tJ Models with Frustrated  
Next-Nearest-Neighbor Antiferromagnetic and Electron-Hopping Interactions”

C.N. Kaplan, 2nd Bilateral Workshop on Solid State and Materials Chemistry, Dresden, Germany (2006)

“Renormalization-Group Theory of Electronic Models: Finite-Temperature Phase Diagrams and  
the Effects of Spatial Anisotropy and Quenched Disorder”

M. Hinczewski, 6th International Conference of the Balkan Physical Union, Istanbul (2006)

“Unusual Phase Transitions in Complex Networks”

M. Hinczewski, 11. National Liquid-State Physics Symposium, Istanbul (2007)

“Connection between Geometry and Thermal Correlations:

Small-World and Community Effects in Scale-Free Hierarchical Networks”

M. Hinczewski, 3rd Bilateral Workshop on Novel Materials, Istanbul (2008)

“Water Flow through Carbon Nanotubes: Charge-Controlled Gating”

O.S. Sariyer, Water: Its Nanophysics and Biochemistry Workshop, Minerva Han, Istanbul (2010)

“Water Flow through Carbon Nanotubes: Ionic Concentration Effects”

V.O. Özçelik, Water: Its Nanophysics and Biochemistry Workshop, Minerva Han, Istanbul (2010)

“Spinless Falicov-Kimball Model in  $d = 3$ : Global Phase Diagram by Renormalization-Group Theory”

Ozan Sariyer, 18. Istanbul Statistical Physics Days, Sabancı University (2011)

“Controlling Frustration, Chaos, and Novel Ordering in Spin Glasses”

Efe Ilker, 22. Istanbul Statistical Physics Days, Istanbul Technical University (2015)

Doctorate Students Supervised by A.N. Berker

## a) At Harvard University

S. Ostlund, Ph.D. 1980, "Statistical Mechanics of Two-Dimensional Systems"

The first half of this thesis was supervised by ANB.

After Ph.D.: Research Associate, Cornell University

Currently: Professor of Physics (tenured), Chalmers University, Sweden

## b) At Massachusetts Institute of Technology

M. Kardar, Ph.D. 1983, "Ordering Phenomena under Competing Interactions in Adsorbed Layers and in Spin Systems"

After Ph.D.: Junior Fellow, Harvard University Society of Fellows

Currently: Professor of Physics (tenured), Massachusetts Institute of Technology

D. Andelman, Ph.D. 1984, "Multicritical Phenomena in Systems with Quenched and Annealed Impurities"

After Ph.D.: Research Associate, Collège de France, Paris

Currently: Department Head and Professor of Physics (tenured), Tel Aviv University

R.G. Caflisch, Ph.D. 1984, "Phase Transitions in Adsorbed Layers, Binary Fluids, Liquid Crystals, and Cubic Crystals"

After Ph.D.: Research Associate, Schlumberger-Doll Research, Connecticut

Currently: Analyst, Clear Systems, Inc., Texas

S.R. McKay, Ph.D. 1986, "Chaotic Spin-Glass Phases and Random-Field Ferromagnets"

After Ph.D.: Assistant Professor of Physics, University of Maine

Currently: Professor of Physics (tenured), University of Maine

K. Hui, Ph.D. 1989, "Quenched Disorder and Competing Interactions in Spin Systems"

After Ph.D.: Research Associate, University of California, Berkeley

Currently: Analyst, Barra Financial Consulting Firm, Berkeley

J.F. Marko, Ph.D. 1989, "On Structure and Scaling at First- and Second-Order Phase Transitions"

After Ph.D.: Research Associate, University of Chicago

Currently: Professor of Physics (tenured), Northwestern University, Evanston

D.P. Aalberts, Ph.D. 1994, "Phase Transition Phenomena in Quantum Spin Systems and in Polyampholyte Gels"

After Ph.D.: Research Associate, University of Leiden

Currently: Department Head and Professor of Physics (tenured), Williams College

A. Falicov, Ph.D. 1994, "Phase Transition Phenomena in Electronic Systems and in Systems with Quenched Field and Bond Randomness"

After Ph.D.: Research Associate, University of California, San Francisco

Currently: M.D.Ph.D. Surgeon, Seattle Orthopaedic and Fracture Clinic, Washington

A. Kabakçioğlu, Ph.D. 1999, "Scaling Studies of Frustrated Systems, Random-Field Tricriticality, Electronic Conduction Models, and Interface Delocalization"

After Ph.D.: Research Fellow, Weizmann Institute of Science

Currently: Associate Professor of Physics, Koç University

G. Migliorini, Ph.D. 1999, "Renormalization-Group Studies of Disordered Magnetic Systems, Strongly Correlated Electronic Systems, and Polymeric Systems"

After Ph.D.: Research Associate, Max Planck Institute, Mainz

Currently: Research Associate, Aston University, Birmingham

M. Hinczewski, Ph.D. 2005, "Renormalization-Group Theory of Correlated Electron Systems"

After Ph.D.: Postdoctoral Researcher, TÜBITAK F. Gürsey Research Institute for Basic Sciences

Currently: Assistant Professor of Physics, Case Western Reserve University

## c) At Istanbul Technical University

H. Kaya, Ph.D. 1999, "Scaling Behavior in Stochastic Growth Models Exhibiting Dynamical Phase Transitions and Degenerate Spin-Glass Order in Diluted Frustrated Systems"

(Degenerate Spin-Glass Order in Diluted Frustrated Systems was directed by A.N. Berker)

After Ph.D.: Postdoctoral Researcher, University of Toronto

Currently: Associate Professor of Physics, Atatürk University, Erzurum

Doctorate Students Supervised by A.N. Berker, continued

## d) At Koç University

O.S. Sarıyer, Ph.D. 2011, “Renormalization-Group Theory of Quantum Particulate Systems”  
 After Ph.D.: Postdoctoral Researcher, University of North Carolina at Chapel Hill  
 Currently: Assistant Professor of Physics, Piri Reis University

## e) At Sabancı University

E. İlker, Ph.D. 2015, “Differentiated Chaos in Phases and Phase Boundaries, Overfrustrated/Underfrustrated Repressed/Induced Spin-Glass Order, Asymmetric Phase Diagrams, and Critical Phases in Spin-Glass Systems”  
 After Ph.D.: Postdoctoral Researcher, Case Western Reserve University  
 Currently: Postdoctoral Researcher, Institut Curie, Paris

T. Çağlar, Ph.D. 2017, “Chiral Spin Glasses, Continuum of Devil's Staircases, and Thesholded Roughening from Frozen Impurities”

**This research won Dr. Gürsel Sönmez Research Award of Sabancı University (2017).**

After Ph.D.: Already has received record number of 11 postdoctoral offers from the USA (6), Europe (2), Korea (1), and Turkey (2).

## f) At Kadir Has University

B. Atalay, current student, “Multifractal Brain and Music”

Master's Thesis Students Supervised by A.N. Berker

## a) At Massachusetts Institute of Technology

W. Hoston, M.S. 1991, "Multicritical Phase Diagrams of the Blume-Emery-Griffiths Model with Repulsive Biquadratic Coupling: Mean-Field and Renormalization-Group Studies"  
 R.R. Netz, M.S. 1991, "Frustration in Magnetic, Liquid Crystal, and Surface Systems: Monte Carlo Mean-Field Theory"

## b) At Istanbul Technical University

H. Kaya, M.S. 1994, “Phase Transitions in Systems with Quenched Randomness: The Hard-Spin Mean-Field Theory Approach” (Chapter in thesis)  
 O.S. Sarıyer, M.S. 2007, “Quantum Phenomena in Anisotropic XXZ Heisenberg Spin Chains with Ferromagnetic and Antiferromagnetic Interactions: Renormalization Group Calculations”  
 A. Tuncer, M.S. 2007, “Lower-Critical Dimension and Quenched Probability Scaling of Ising Spin Glasses: Renormalization-Group Study in Non-Integer Dimensions”  
 B. Yücesoy, M.S. 2007, “Non-Equilibrium Behavior of a Complex Ordering System: Hysteresis in the  $d=3$  Ising Spin-Glass from Hard-Spin Mean-Field Theory”  
 V.O. Özçelik, M.S. 2008, “Global Phase Diagrams of BEG Spin-Glass and Spinless Fermion Systems”

## c) At Koç University

A. Erbaş, M.S. 2007, “Two Statistical Physics Problems: Phase Diagram Calculation of Spatially Anisotropic, Surfaced  $d=3$  Layered Systems by Renormalization-Group Theory and Vehicle and Route Optimization with Traffic Factors for Migros Home Delivery System by Simulated Annealing”  
 B. Renklioğlu, M.S. 2007, “Stepwise Positional and Orientational Ordering in the Spin-3/2 Ising Model: A Plastic Crystal Phase Diagram from Renormalization-Group Theory”  
 C. Güven, M.S. 2008, “Reentraant and Forward Phase Diagrams of the Anisotropic  $d=3$  Ising Spin Glass”  
 C.N. Kaplan, M.S. 2008, “Renormalization-Group Theory of Classical and Quantum Systems with Frozen Disorder”

## d) At Sabancı University

B. Atalay, M.S. 2018, “Maximally Random Systems, Maximally Degenerate Ordering, and Lower Lower-Critical Spin-Glass Dimension”

Undergraduate Thesis Students Supervised by A.N. Berker

## a) At Massachusetts Institute of Technology

- H. Chou, B.S. 1981, "Binary Fluid Mixtures with Three Critical Points due to Orientational Correlations"
- D.A. Seibert, B.S. 1981, "Asymmetric Closed-Loop Phase Diagrams in Binary Fluid Mixtures: A Renormalization-Group Approach"
- J.E. Simko, B.S. 1982, "Searching for Fisher Renormalization Effects: The Triangular Ising Lattice"
- R.E. Goldstein, B.S. 1983, "Molecular Theory of Reentrant Phase Transitions in Binary Liquid Mixtures" \*
- This research won the Orloff Research Award of the MIT Physics Department (1983).**
- This research won the Apker Award of the American Physical Society (1983).**
- R.J. Lenk, B.S. 1983, "Phase Diagrams and Critical Behavior of a Generalized Helical Potts Model on the Triangular Lattice"
- S.I. Chase, B.S. 1985, "Renormalization-Group Analysis of the q-State Potts Model" \*
- W.V. Wang, B.S. 1985, "Surface Free Energy of the Two-Dimensional Ising Models and Universality of Finite-Size Scaling Amplitudes by the Method of Pfaffian and Dimer Statistics" \*
- J.E. Hilliard, B.S. 1989, "Monte Carlo Simulation of a One-Dimensional Ising System with Competing Interactions Using Domain Walls"
- G.T. Pickett, B.S. 1989, "Asymptotic Behavior of the Spectrum of Generalized Dimensions in Multifractal Tree Growth"
- A.A. Naqvi, B.S. 1994, "Frustrated Systems and Hard-Spin Mean-Field Theory"
- A. Lopatnikova, B.S. 1997, "Renormalization-Group Theory of Superfluidity and Phase Separation of Helium Mixtures Immersed in Aerogel" \*
- This research won the Orloff Research Award of the MIT Physics Department (1997).**
- This research won the Apker Award of the American Physical Society (1997).\*\***
- D. Yeşiltepe, B.S. 1997, "Renormalization-Group Calculation of Local Magnetizations and Correlations: Random-Bond, Random-Field, and Spin-Glass Systems" (Chapter in thesis) \*
- This research won the Orloff Research Award of the MIT Physics Department (1997).**

## b) At Istanbul Technical University

- A. Erbaş, B.S. 2004, "Heat Capacities of Anisotropic Ising Models" \*
- O.S. Sarıyer, B.S. 2004, "Renormalization-Group Theory of the Excitation Spectrum Gap and Spin-Wave Stiffness in Isotropic and Anisotropic Quantum Heisenberg Magnets" \*
- A. Tuncer, B.S. 2004, "Renormalization-Group Theory of Spatially 2+1 Anisotropic d=3 Percolation Systems" \*
- B. Yücesoy, B.S. 2004, "Renormalization-Group Theory of Spatially Uniaxially Anisotropic d=3 Ising Spin, XY Spin, and Electronic Systems" \*
- S.R. Baronyan, B.S. 2005, "Renormalization-Group Flows of a Hierarchical Spin Model with Competing Interactions and Thermal Vacancies"
- B. Renklioğlu, B.S. 2005, "Phase Transition and Critical Exponent in a Small World Network"
- N. Aral, B.S. 2006, "Spin Correlation Functions of Frustrated Systems Exhibiting Chaotic Rescaling" \*
- A. Doldurucu, B.S. 2006, "A Microscopic Model of Electrophoresis"
- C. Güven, B.S. 2006, "A Novel Spin Glass: The d=3 Transverse Spin Glass and its Renormalization-Group Transformation"
- C.N. Kaplan, B.S. 2006, "İkinci Komşu Manyetik ve Elektron Etkileşmeli d=3 tJ Modelinin Renormalizasyon Grubu Çözümü" \*
- V.O. Özçelik, B.S. 2006, "Termal ve Donmuş Düzensizlikleri Olan bir Spin Sisteminde Renormalizasyon Grubu Dönüşümü"

\* Undergraduate research led to publication in refereed journal.

\*\* A.N. Berker thereby became the first faculty supervisor to have two undergraduate research students on separate years win the Apker Award of the American Physical Society. This feat was subsequently equalled by A.N. Berker's doctorant (see page 16) Prof. D.P. Aalberts of Williams College.



Undergraduate Thesis Students Supervised by A.N. Berker, continued

## c) At Koç University

- Ş. Namırtı, “Simulated Annealing, Quantum Hamiltonian Evolution, and other Statistical Physics Methods Applied to Flexible Route Optimization for Migros e-Market” (undergraduate research project)  
 E. İlker, “XY Spin-Glasses in Three Dimensions” (undergraduate research project) \*  
 T. Çağlar, “Interface-Roughening Phase Diagram of the Three-Dimensional Ising Model for All Interaction Anisotropies from Hard-Spin Mean-Field Theory” (undergraduate research project) \*

## d) At Sabancı University

- M. Demirtaş, “Lower-Critical Spin-Glass Dimension from 23 Sequenced Hierarchical Models” (undergraduate research project) \*  
 Y. Ezber (Bosphorus University student), “Spin-Glasses with Long-Range Frustration” (undergraduate research project)  
 Ç. Yunus (Bosphorus University student), “Stepwise Positional-Orientational Order and the Multicritical-Multistructural Global Phase Diagram of the  $s=3/2$  Ising Model from Renormalization-Group Theory” (undergraduate research project) \*  
 G. Akdeniz (Robert College high school student), Ersin Arıoğlu (Koç Lisesi high school student) “Interdisciplinary Scientific Referencing: A Comparative International Data Analysis” (high school research project)  
 N. Yurdakul, E. Akdere, R.E. Berker, K. Ertaş, N. Köylüoğlu (Robert College high school students), M. Cezairli (Üsküdar American Academy high school student) “A Comparative Study of Interdisciplinarity in Sciences in Brazil, South Korea, Turkey, and USA” (high school research project)  
 Y.E. Bahar, “Flexible Arbitrary Rescaling Renormalization-Group Transformations and Interface Roughening from Local Magnetizations Calculated by Renormalization-Group Theory”

\* Undergraduate research led to publication in refereed journal.

Courses Taught by A.N. Berker**In 20 years at MIT:**

31 semesters lecturing 9 courses, 5 semesters recitations, and 7 intensive 1-month course lecturing:

8.04	Undergraduate Quantum Physics I	(Lectures and Recitations)
8.05	Undergraduate Quantum Physics II	(Lectures and Recitations)
8.07	Undergraduate Electromagnetism II	(Lectures)
8.231	Undergraduate Physics of Solids I	(Lectures and Recitations)
8.232	Undergraduate Physics of Solids II	(Lectures)
8.235	Superconductivity	(Lectures)
8.236	Phase Transitions and Renormalization-Group Theory	(Lectures)
8.237	Neural Networks and Simulated Annealing	(Lectures)
8.581	Entropy, Information and the Brain	(Co-lecturer)
8.321	Graduate Quantum Theory I	(Lectures)
8.322	Graduate Quantum Theory II	(Lectures)
8.333	Graduate Statistical Mechanics I	(Lectures and Recitations)
8.334	Graduate Statistical Mechanics II	(Lectures and Recitations)
8.392	Graduate Statistical Mechanics III	(Lectures)

Received the MIT Department of Physics Buechner Teaching Prize (1986-7) for his teaching of the graduate statistical mechanics sequence 8.333, 8.334, and 8.392 .

Received the MIT School of Science Teaching Prize for Excellence in Graduate Education (1995).

**At Istanbul Technical University:**

FIZ111, FIZ101T	Physics I: Mechanics	(Lectures and Recitations)
FIZ132, FIZ102T	Physics II: Electricity and Magnetism	(Lectures and Recitations)
KIM101E	General Chemistry I	(Lectures)
FN607, FIZ621	Fluctuations, Scaling, and Universality	(Lectures)
FN608	Graduate Statistical Mechanics	(Lectures)
ITB016E	Science and Engineering from the Humanist: Italo Calvino	(Lectures)
ITB027E	Estrangement/Involvement in 5 Works by Camus and Sartre	(Lectures)
ITB143E	Durrell and Said: Orientalism Practiced and Theorized	(Lectures)
ITB179E	Literatures of Intimate Separacies: Vizenos, Seyfettin, Armen	(Lectures)
ITB179	İççe Ayrıllıkların Edebiyatları: Vizenos, Seyfettin, Armen	(Lectures)

**At the TÜBİTAK Feza Gürsey Research Institute,  
Erzurum Atatürk University, Kayseri Erciyes University:**

Phase Transitions and Renormalization-Group Theory	(Lectures)
Augmented Mechanics, a course designed for high school students	(Lectures)

**At Koç University:**

PHYS101	Physics I: Mechanics	(Lectures)
PHYS102	Physics I: Electricity and Magnetism	(Lectures)
PHYS301	Undergraduate Statistical Physics	(Lectures)
PHYS409/509	Phase Transitions and Renormalization-Group Theory	(Lectures)
PHYS506	Graduate Quantum Statistical Mechanics	(Lectures)

**At Bosphorus University:**

SCI 102 module	Water: Its Physics, Nanophysics, Chemistry, and Geopolitics	(Lectures)
HUM 101,102 module	Alcibiades & Philoctetes: Individual's Talents and Rights in an Oligarchical Society	(Lectures)

**At Sabancı University:**

IF200	Fantasy, Reality, Science, and Society	(Lectures)
NS210	Water: Its Physics, Nanophysics, Chemistry, and Geopolitics	(Lectures)
NS220	World Energy Outlook: The Coming Year	(Lectures)
PHYS412	Statistical Mechanics	(Lectures)
PHYS438/538	Phase Transitions and Renormalization-Group Theory	(Lectures)
SPS325	Alcibiades and Philoctetes: Individual's Talents and Rights in an Oligarchical Society	(Lectures)
SULYO FN01	Quantum Mechanics and Nano Science (Summer School for High School Students)	(Lectures)
SULYO FN05,6	Augmented Mechanics 1, 2 (Summer School for High School Students)	(Lectures)
<b>Sakıp Sabancı Museum Full Semestre Public Course</b>	<b>Durrell&amp;Said: Orientalism Practiced and Theorized</b>	<b>(Lectures)</b>

**At Kadir Has University:**

<b>Full Semestre Open-to-Public Course:</b> Durrell&Said: Orientalism Practiced and Theorized	(Lectures)
<b>Full Semestre Open-to-Public Course:</b> Literatures of Intimate Separacies: Vizyenos/Papadiamantis, Seyfettin/Cumalı, Armen	(Lectures)
<b>Full Semestre Open-to-Public Course:</b> Relations and Estrangement/Engagement in 7 Works by Sartre, Beauvoir, Camus (taken by 107 women and men uniformly covering a 50-year time-span 1954-2002 of birthdates)	(Lectures)
<b>Full Semestre Open-to-Public Course:</b> Women's Rights Given by Legislation and Taken Back by Literature: Reşat Nuri Güntekin	(Lectures)
Phase Transitions and Renormalization-Group Theory (Full semester Saturday School)	(Lectures)
Augmented Mechanics 1+2 (Summer School for High School Students)	(Lectures)
Quantum Mechanics (Summer School for High School Students)	(Lectures)
Mandelbrot, Feynman, D'Arcy Thompson, Lavoisier: Advanced English Readings in the Fundamental Sciences (Summer School for High School Students)	(Lectures)
CH201 Materials Science	(Lectures)
GE200 Fantasy, Reality, Science, Society, and Law	(Lectures)
PH121 Mechanics	(Lectures)

**YÖK Higher Education Council, High Performers Natural Sciences Program – Istanbul University  
(for topmost Natural Sciences students from all of Turkey)**

Augmented Mechanics	(Lectures)
Electricity ve Magnetism	(Lectures)
Mandelbrot, Feynman, D'Arcy Thompson, Lavoisier: Advanced English Readings in the Fundamental Sciences	(Lectures)

Some of the Funding and Administrative Activities Conducted by A.N. Berker

Principal Investigator of Research Grants from the National Science Foundation, Army Research Office, Joint Services Electronics Program, Department of Energy, U.S.A; Intevp Petroleum Company, Alfred P. Sloan Foundation; 1979-2002, totalling approximately \$2 500 000 .

Principal Investigator of Research Grants from TÜBİTAK Basic Sciences Research Group, Migros KÜMPEM, MIT Physics Department, 2002-

MIT Undergraduate and Graduate Admissions. MIT Physics Department General Examination Committees

Chairperson of the MIT Condensed Matter Physics Seminars (1980-89)

Faculty Search Committee for the New Head of the MIT Physics Department (1981)

Co-Chair, Dept. Energy Workshop (1981): "Future Trends in Condensed Matter Theory and the Usage of Computation"

Reporter for the Visiting Committee of the MIT Physics Department (1982)

Co-founder of the Center for Theoretical Condensed Matter Physics at MIT (1982)

Chairperson of the MIT Herman Feshbach Lecture Series (1986-89)

MIT-Lincoln Laboratories Faculty Liaison Committee (1987-88)

Chairperson of the MIT Harris Lecture Series (1992-97)

Interdisciplinary Research Group Leader at the MIT Center for Materials Science and Engineering (1993-94)

Chairperson of the Committee for a New Booklet for the MIT Physics Department (1994-95)

Founder and co-chairperson, Istanbul Technical Univ. Statistical Physics Days. Editor of the Proceedings (1994, 97-99). Yearly conference still continues.

TÜBİTAK Feza Gürsey Research Institute for Basic Sciences Advisory Committee (1997-99), Executive Committee (2000-11), Chairperson of the Executive Committee (2007-2011)

Chairperson of Search Committee for New Director of TÜBİTAK F. Gürsey Research Inst. for Basic Sciences (1999)

Chairperson of the ITU Physics Colloquia (1999-2000)

Founder and Editor, Istanbul Physics Calendar (1999-2001). Weekly calendar still continues.

**Head of the Physics Department, Istanbul Technical University (2000-03);** has restructured the Physics Department course program and the university-wide Physics I,II courses (approximately 2400 students each semester).

Distinguished Lectures Committee, Academy of Sciences of Turkey (2000-01)

Ethics Committee, Academy of Sciences of Turkey (2001); "Ethics and its Issues in Scientific Research", C. Ertekin, N. Berker, A. Tolun, and D. Ülkü, 70 pages, Academy of Sciences of Turkey Publications (2002)

Editor-in-Chief, ARI – Bulletin of the Istanbul Technical University (2002-04)

International Union of Pure and Applied Physics, Commission on Statistical Physics (2002-08)

Head of the Engineering Physics Program, ITU (2002-05)

**Dean of the School of Sciences and Letters, Istanbul Technical University (2003-04);** has restructured the university-wide Chemistry I, Mathematics I,II, Differential Equations, Linear Algebra courses (approximately 6000 students each semester).

Founder and Director, MIT - Turkey Freshman Scholars Program (2003-)  
 Academy of Sciences of Turkey, Award Program for Highly Successful Young Scientists (GEBİP): Astronomy-Physics-Mathematical Sciences Area Evaluation Committee member (2006-09,2013), chairperson (2007-09)  
 Council Member, Academy of Sciences of Turkey (2008-12)  
 Faculty Council Member and Faculty Governing Council Member, Faculty of Sciences, Koç University (2008)  
 Kadir Has University External Advisory Board (2008), Faculty of Engineering, Natural Sci. Ext. Advis. Brd. (2014-16)  
 ITU-LARF: Founded the ITU Undergraduate Students Research Opportunities Program (2008)  
 Vice President, Sabancı University (1-7/2009)

**President, Sabancı University (2009-2016):** Started SUNUM Sabancı University Nanotechnology Research and Application Center, IICEC Istanbul International Climate and Energy Center, SU Integrated Manufacturing Technologies Center, SU-Mercator Foundation Turkish-German high school/university student youth bridge, MIT-SU strategic collaborations. Outside funding of projects increased importantly every year starting the beginning of presidency. Journal publications by faculty members were motivated and increased considerably. Student academic success and therefore grades have improved importantly. Started, under the Inter-Faculty IF code, truly interfaculty undergraduate courses. Brought departmental specialization to the end of the first undergraduate year, cutting down the previous two-year waiting period. Started faculty advisors from the first day of undergraduate education. Started 55 different double-degree programs. For example in 2015 with 1308 active personal research projects conducted by undergraduate students, created a student research-oriented and generally student-focused environment. Introduced undergraduate research advising to faculty evaluations. On most days throughout the year, as President had his lunch with students at randomly chosen dining hall tables. Started free, widely attended, open-access courses for the general public of all ages. Started SU Karaköy Science and Culture Academy for adults with strong scholarship support (and participation) for high school teachers. Started SU Conference Series Books (with books by Prof. Tosun Terzioğlu, Cem Mansur “Music, Mankind, and Peace”, Kemal Derviş). Started the Dicle Koğacıoğlu Writing Award. Gave dozens of motivation/guidance seminars at high schools all over Turkey. Extending the University Summer Courses for High School Students that he had previously (2008-) brought to Turkey at the TÜBİTAK Feza Gürsey Research Center, together with Vice-President Prof. Sondan Durukanoğlu Feyiz conceived and conducted the SU Summer School for High School Students, with each summer 1000 high school students taking over 40 university courses, and a very large net income to be given to the SU undergraduate scholarship fund. Restructured continuous daily open houses for high school students and their parents during university choosing period, other high school outreach programs, and undergraduate scholarship offering distributions. Thus dramatically improved undergraduate student entrance profiles in every faculty. Restructured, thus considerably enhancing academic engagement, the Sakıp Sabancı Research Award. Together with Neyyir Berktaş and Dilek Sabancı, produced in two languages the study “Towards a Barrier-Free Turkey: Where Do We Stand? The Status Quo and Proposals” (309 pages). Together with Prof. Özgür Demirtaş and Suzan Sabancı, founded the SU Center of Excellence in Finance. Together with Prof. Sadık Esener and Sevil Sabancı, constructed the blueprint for the Sabancı University Faculty of Law. Together with Prof. Tülin Erden and Prof. Füsün Ülengin, for the Sabancı School of Management, constructed the position of Global Preeminent Visiting Professor, now employed by another leading university. Started book distribution club and yearly reading workshops including authors with strong joint participation from administrative personnel, students, faculty, and alumni. Started free “currently playing movie” evenings for students-faculty-staff-alumni. Started SU Alumni Association international cultural trips, with the participation and guidance of history professors. Designed and first implemented SU Emeritus Professorship, including (wooden) Emeritus Armchair. The Entrepreneurship and Innovation University Index given by the Ministry of Science, Industry, and Technology increased, in first and seldom second place, and during the last year of his Presidency, peaked at 95/10. Brought Sabancı University generally to first-place rankings in Turkey, top rankings internationally. etc.

During his Presidency, taught at least one course every semestre and published 15 papers in The Physical Review.

[Click here for Presidency photos.](#)

[Click here for Graduation Day speeches: 2014, 2015, 2016](#)

Editor-in-Chief, Turkish Journal of Physics (2009-10), Advisory Board (2010-)  
 Technical Track Leader, 10<sup>th</sup> American Soc. Mechanical Engineers Conf. Engineering Systems Design Analysis (2009)  
 Advisory Editor, Physica A, Elsevier (2010-)  
 Co-chairperson, Istanbul Statistical Physics Days (2010-12), Program Committee (2013-17)  
 Scientific Committee Chairperson, 28. Int. Physics Conference, Turkish Physical Society (2011), Advisory Board (2012-16), Scientific Committee (2017)  
 Science Board, Abdullah Gül University (2011-)

International Advisory Board of Superconductor Technologies Application and Research Center, Ankara Univ. (2012-)  
Scientific Board of AXA Research Fund, Paris (2012-)  
Scientific Council of ICTP-Eurasian Center for Advanced Research ICTP-ECAR, Izmir High Technology Inst. (2013-)  
International Advisory Committee, 4.,5. International Conferences on Superconductivity and Magnetism (2014, 2016)  
International Advisory Committee, 9. International Physics Conference of the Balkan Physical Union IPCBPU-9 (2015)  
Advisory Board, Turkey-Germany Youth Bridge (2014-)  
International Advisory Board, University Excellence Care Project, Singapore (2014-)  
Academy Awards Committee, Academy of Sciences of Turkey (2015)  
Scientific Committee, International Conference on Quantum Science and Applications, Eskişehir (2016)  
Board of Trustees, Robert College (2016-); Vice Chair of the Board of Trustees (2018-)  
YÖK Higher Education Quality Council, Institutional External Evaluation Group Leader (2016-)  
YÖK Higher Education Council, High Performers Natural Sciences Program, Faculty Member (2017-)  
**Dean of Engineering and Natural Sciences, Kadir Has University (2017-)**  
**Vice-President, Kadir Has University (2018-)**  
Advisory Board, Center of Excellence for Gender and Women's Studies, Sabancı University (2017-)  
Senior Scholar, Istanbul Policy Center, Sabancı University (2017-)  
Board of Trustees, Natural Sciences Research Foundation of Turkey, Tuzla (2017-)