



## CURRICULUM VITAE

**Name, Surname:** Assos. Prof. Dr. Handan Arkin Olğar

**Born:** 4 November 1974, Berlin

### Academic Degrees:

**Assos. Prof. Degree** Condensed Matter Physics, November 2005

**PhD.** Physics Engineering, March 2003 Hacettepe University, Ankara, Turkey.

**M.Sc.** Physics Engineering, August 2000 Hacettepe University, Ankara, Turkey.

**B.Sc.** Physics Engineering, June 1997 Hacettepe University, Ankara, Turkey

### Professional Affiliations

**November 2011 – present** Prof. Dr. , Ankara University, Department of Physics Engineering

**March 2008 – November 2011** Assos. Prof. Dr. , Ankara University, Department of Physics Engineering

**March 2007 – February 2008** Postdoctoral Fellowship, Ankara University, Department of Physics Engineering

**June 2004- October 2004,** Postdoctoral Fellowship, Institute of Theoretical Physics, University of Leipzig.

**July 2003- October 2003,** Postdoctoral Fellowship, Institute of Theoretical Physics, University of Leipzig.

**January 1998 – March 2007** Teaching and Research Assistant, Hacettepe University, Department of Physics Engineering.

### Awards:

- **Turkish Scientific and Technological research Council** Young Researcher Carrier Program 2004
- **L' OREAL** Young Women Scientist Award 2005
- **Turkish Academy of Sciences (TÜBA)** Outstanding Young Scientist Award 2006
- **Alexander von HUMBOLDT Foundation** Experienced Researcher Fellowship 2010

### Fellowships:

- Turkish Scientific and Technological research Council, Master fellowship (1998-2000)
- Turkish Scientific and Technological research Council, PhD fellowship (2000- 2003)
- DFG (Deutsche Forschungsgemeinschaft) International Scientific Exchange Program (Theoretical Physics Institute, University of Leipzig, Germany, July-October 2003)
- DFG (Deutsche Forschungsgemeinschaft) International Scientific Exchange Program (Theoretical Physics Institute, University of Leipzig, Germany, June-October 2004)
- Turkish Scientific and Technological research Council, Postdoc fellowship, Ankara University, Dept. Physics Engineering (2007- 2008)
- Alexander von Humboldt Foundation Return Fellowship 2013 - 2014

### **Important Seminars and Colloquia:**

- **Humboldt Kolleg:** German-Turkish Cooperation in Physics: New Challenges in Science, 2014, 11-13 June 2014, Ankara University, Ankara, Turkey, organized by Prof. Dr. Handan Olgar
- Conformational Behavior of a polymer chain in an Attractive Spherical Cage, Sonder Forschung Bereich SFB/TR102 Fall Meeting Miniworkshop Brehna, 19 October 2012, Brehna, Germany, invited speaker.
- “Simulations of Biological Molecules, SPG Kick-Off Meeting, 24 June 2011, Leipzig, Germany, invited seminar.
- “Structural Transitions Mechanism in Protein Models”, L’oreal Young Women Scientist Meeting, 16 May 2009, İstanbul, Turkey, invited speaker.
- “Generalized Ensemble Simulations of off-lattice Protein Models” Turkish Academy of Sciences Outstanding Young Scientist Annual Meeting, September 2007, Atatürk University, Erzurum, Turkey, invited speaker.
- “Simulations of Biological Molecules by Generalized-Ensemble Algorithms”, Statistical Physics Days (invited) July 2005, İstanbul, Turkey, invited speaker.
- “Generalized-Ensemble Simulations of Peptides and Proteins, NTZ- Kolloquium, October 2004, University of Leipzig, Leipzig, Germany, seminar.
- “Structure of Energy Landscape of Peptides and Proteins”, Institute of Theoretical Physics, June 2003, University of Leipzig, Leipzig, Germany, seminar.
- “Multicanonical Simulations of Biological Molecules”, Physics Department Seminar Series, September 2003, Hacettepe University, Ankara, Turkey, seminar.

### **Projects:**

- “Investigation of Biologically Motivated Problems in Statistical Physics: Molecular Modeling”, The Scientific and Technological Research Council of Turkey: Young Scientist Career Project, No: 150T146, 2005-2011, Director of Project.
- “Simulations of Biological Molecules and Development of New Algorithms”, Hacettepe University, Research Project No: 03.01.602.002, 2003, Director of Project.
- “Development of Searching algorithms for Conformational Space of Biological Molecules” Hacettepe University Research Project No: 02.02.602.010, 2003, Researcher.
- “Multicanonical Simulations of Peptides and Proteins” Hacettepe University Research Project No: 02.01.602.006, 2002, Researcher.
- “Simulations of Biological Molecules by General Update Algorithms, Hacettepe University Research Project, No: 01.01.602.006, 2001, Researcher.
- “Multicanonical Simulations of Some Peptides” Hacettepe University Research Project No: 01.00.602.001, 2000, Researcher.

**Courses Given:**

121 Physics I

122 Physics II

305 Quantum Mechanics I

306 Quantum Mechanics II

422 Computer Applications in Physics

516 Advanced Numerical Applications in Statistical Physics

**Publications:****B) Articles in journal / contributions to books**

**B1.** Benam, Z. H., Arkin, H., Aktürk, E. (2016) Effects of the Substitutions and Vacany Defects on the Stable monolayers of Black and Blue Arsenic Phosphorous: A first Principles Study, arXiv:1609.09484

**B2.** Arkin, H., Aktürk, E. (2016) Investigation of adatom adsorption on single layer buckled germanium selenide, Appl. Surface Sci., 390, 185, 2016.

**B3.** Arkin, H., Janke, W., (2015) Polymer Adsorption on Curved Surfaces, arXiv:1512.06990.

**B4.** Arkin, H., Janke W., (2013): Gyration Tensor Based Analysis of the Shapes of the Polymer Chain in an Attractive Spherical Cage, J. of Chem. Phys. 138, 054904.

**B5.** Arkin, H, Janke W., (2013): Polymer-Attractive Spherical Cage System, Eur. Phys. J. Special Topics, 216, 181.

**B6.** Arkin, H., Janke W., (2012): Ground State Properties of a Polymer Chain inside an Attractive Sphere, J. Phys. Chem B, 116 (34) 10379.

**B7.** Arkin, H., Janke W., (2012): Structural Behavior of a Polymer Chain inside an Attractive Sphere, Phys. Rev. E85, 051802.

**B8.** Marenz, M., Zierenberg, J., Arkin, H., and Janke, W., (2012): Simple Flexible Polymers in a Spherical Cage, J. Cond. Matter Phys., Vol. 15, No:4, 43008.

**B9.** Bilsel, M., Taşdizen B., Arkin, H., Janke W., (2012): Effects of Confinement on the Thermodynamics of a Model Protein, John von Neumann Institute for Computing, Jülich, IAS Series Vol. 8, pp. 21 – 24.

**B10.** Bilsel, M and Arkin, H. (2010): Residue Length and Solvation Model Dependency of Elastin-like Polypeptides, Phys. Rev. E, 81, 051906.

**B11.** Arkin, H. and Bilsel, M (2010): How conformational Transitions Depends on hydrophobicity of Elastin-Like Polypeptides, Eur. Phys. J. E, Vol. 31(3), 327- 332.

- B12.** Arkin, H. (2010): Comparison of the Paralel Tempering Algorithm and Multicanonical Method as Applied to Coarse-Grained Off-Lattice Models for Folding Heteropolymers, *J. Of Statistical Phys.* Vol. 139(2), 326-332.
- B13.** Aktürk, E., Gülseren, O., Arkin, H. and Çelik, T. (2010): First Principles Investigation of Amino Acid Adsorption on Si(100)-2x1 Asymmetric Surface. *Int. J. Of Mod. Phys. C*, Vol. 21(1), 97-106.
- B14.** Arkin, H. (2010): Conformational properties of surfactant-like peptides with variable glycine tails. *Physica A* 389, 265-272.
- B15.** Arkin, H. (2009): Adsorption of a hydrophobic-polar-model heteropolymer in an attractive nanotube. *Phys. Rev. E* 80, 041910. *Virtual Journal of Nanoscale Science & Technology*, Oct. 19 (2009); *Virtual Journal of Biological Physics Research*, Oct. 2009.
- B16.** Arkin, H. (2008): Determination of the structure of the energy landscape for coarse-grained off-lattice models of folding heteropolymers. *Phys. Rev. E* 78, 041914.
- B17.** Aktürk, E., Arkin, H. and Çelik, T. (2007): The structure of the free energy surface of coarse-grained off-lattice protein models. *Int. J. of Mod. Phys C*, 18(1), 99- 106.
- B18.** Aktürk, E. and Arkin, H. (2007): Nonextensive Statistical Mechanis Application to Vibrational Dynamics of Protein Folding. *Int. J. of Theo. Phys.* 46(11), 2945- 2949.
- B19.** Bachmann, M., Arkin, H. and Janke, W. (2005): Multicanonical Study of Coarse-Grained Off-Lattice Models for Folding Heteropolymers. *Phys. Rev. E*, **71**, 031906; *Virt. J. Biol. Phys. Res.* 9.
- B20.** Gökoğlu, G., Arkin, H., Aktürk, E. and Çelik, T. (2005): Solvation Effects on Free Energy Surface of Polyalanine. *Int. J. of Mod. Phys. C* 16 (9), 1489-1496.
- B21.** Arkin, H. (2005): Study of Conformational Structure of Elastin Sequences With Solvent-Included Force-Field. *Int. J. Of Mod. Phys. C* 16(9), 1339-1346.
- B22.** Gökoğlu, G., Arkin, H. and Çelik, T. (2005): Conformational Analysis of Polyalanine Chains. *Int. J. of Mod. Phys. C* 16(3), 455-463.
- B23.** Arkin, H. (2004): A Combination of Replica Exchange Monte Carlo and Energy Landscape Paving Algorithms to Increase The Effectiveness of Conformational Sampling. *Int. J. of Modern Physics C*, 15(7), 933-937.
- B24.** Arkin, H. (2004): Searching Low-Energy Conformations of Two Elastin Sequences. *Eur. Phys. Jour. B*, 37, 223-228.
- B25.** Arkin, H. (2004): Simulations of Peptide Models in a Solvent. *Int. J. of Modern Physics C*, 15(2), 223-231.
- B26.** Arkin, H. and Çelik, T. (2003): A Fast and Effective Conformational Search Method for Peptides. *Int. J. of Modern Physics C*, 14(7), 985-991.

- B27.** Arkın, H. and Çelik, T. (2003): Determination of Conformational Transitions of Peptides from Energy Landscape. *Int. J. of Modern Physics C*, 14(5), 567-574.
- B28.** Arkın, H. and Çelik, T. (2003): Structure of The Energy Landscape of Short Peptides. *Int. J. of Modern Physics C*, 14(1), 113-120.
- B29.** Arkın, H. and Çelik, T. (2002): Comparison of The Energy Landscape Paving and Multicanonical Methods in Simulation of The Heptapeptide Deltorphin. *Eur. Phys. Jour. B*, 30, 577-580.
- B30.** Yaşar, F., Arkın, H., Çelik, T., Berg, B. A. and Meirovitch, H. (2002): Efficiency of The Multicanonical Method as Applied To Peptides of Increasing Size: The Heptapeptide Deltorphin. *J. Computational Chem.*, Vol: 23(12), 1127-1134.
- B31.** Arkın, H., Yaşar, F., Köksel, H., Çelik, S. and Çelik, T. (2001): Molecular Modeling of The Pentapeptide and Tetrapeptide Sequences of C-Hordein. *J. of The Institute of Brewing*, 107(6), 383-388.
- B32.** Arkın, H., Yaşar, F., Köksel, H., Çelik, S. and Çelik, T. (2001): Molecular Modeling of Two Hexapeptide Repeat Motifs HMW Glutenin Subunits. *Int. J. of Modern Physics C*, 12(2), 281-292.
- B33.** Arkın, H., Yaşar, F., Köksel, H., Çelik, S. and Çelik, T. (2000): Molecular Modeling of Five Tetrapeptide Sequences in the Central Domain of HMW Glutenin. *Int. J. of Modern Physics C*, 11(8), 1595-1606.
- B34.** Arkın, H. and Çelik, T. (2000): Study of Phase Conversion in Three Dimensional  $q = 3$  Potts Model. *Int. J. of Modern Physics C*, 11(7), 1313-1320.
- B35.** Arkın, H., Çelik, T., Berg, B. A. and Meyer-Ortmanns, H. (1999): Study of Phase Separation in a First-Order Phase Transition: Nucleation vs. Spinodal Decomposition. *Int. J. of Modern Physics C*, 10, 1261-1269.

#### **(Papers in Turkish)**

- B36.** Arkın, H. (2007): Multikanonik simülasyon yöntemi ile peptidlerin enerji yüzeylerinin incelenmesi (Investigation of the energy landscape of peptides by Multicanonical Simulation Method). *Anadolu University Journal of Science and Technology*, Vol: 8, o: 1, pp: 103-110.
- B37.** Arkın, H. (2007): Multikanonik Simülasyon Yöntemi ile Peptidlerin Sıvı İçindeki Yapılarının İncelenmesi ( Investigation of peptides in a Solvent by Multicanonical Simulation Method). Süleyman Demirel University, *Journal of Natural Sciences*, 11, 1-7.

#### **C) Published Contributions to Academic Conferences**

- C1.** Bilsel M. and Arkın, H. (2009) : Conformational Transition in Elastin Polypeptide with Different Residue Length. *AIP Proceedings 7th Balkan Physical Union General Conference Alexandroupolis, Greece.*

**C2.** Arkin, H. and Çelik, T. (2002): Phase Separation in 3D Three State Potts Model. Nuclear Physics A Proceedings of the International Symposium on Statistical QCD, Bielefeld, Germany, P5, Elsevier.

**C3.** Arkin, H., Yaşar, F., Çelik, T., Berg, B. A. and Meirovitch, H. (2002): Multicanonical Simulations of Same Peptides. Comput. Physics Commun., 147, 600-603.

**C4.** Arkin, H., Yaşar, F., Köksel, H., Çelik, S. and Çelik, T. (2001): Multicanonical Simulations of Five Tetrapeptide Sequences in The Central Domain of HMW Glutenin. AACC Annual Meeting, Charlotte, North Carolina, 414.

**C5.** Arkin, H and Çelik, T. (2002): Spinodal Decomposition in 3D  $q=3$  Potts Model. Nuclear Physics B (Proc. Suppl.), 106, 926-928.

**C6.** Arkin, H., Çelik, T., Berg, B. A. and Meyer-Ortmanns, H. (1999): Phase Separation in a Weak First-Order Phase Transition. Physica A, 274, 320-324.

#### D) Academic Conferences

**D1.** Tasdizen, B., Arkin, H., Janke, W., (2014): “Investigation of the Conformational Space of Hydrophobic-Polar Model Proteins”, Humboldt Kolleg: German-Turkish Cooperation in Physics: New Challenges in Science, 11-13 June 2014, Ankara University, Ankara, Turkey .

**D2.** Marenz, M., Zierenberg, J., Arkin, H., and Janke, W., (2014): “Simple Polymer in a Spherical Cage”, Humboldt Kolleg: German-Turkish Cooperation in Physics: New Challenges in Science, 11-13 June 2014, Ankara University, Ankara, Turkey.

**D3.** Arkin, H., Janke, W., (2013): “Polymer adsorption in an attractive sphere”, 38th Conference of the Middle European Cooperation in Statistical Physics - MECO38, 25-27 March 2013, ICTP, Trieste, Italy.

**D4.** Arkin, H., Janke, W., (2012): “Thermodynamics of a polymer chain in a spherical cage”, Comphys12, 29 November – 1 December 2012, Leipzig, Germany.

**D5.** Marenz, M., Zierenberg, J., Arkin, H., and Janke, W., (2012): “Polymers in a Spherical Cage”, Comphys12, 29 November – 1 December 2012, Leipzig, Germany.

**D6.** Arkin, H., Janke, W., (2012): SFB/TR102 Fall Meeting Miniworkshop Brehna, Conformational Behavior of a polymer chain in an Attractive Spherical Cage, 19 October 2012, Brehna, Germany.

**D7.** Arkin, H., Janke, W., (2012): Polymer Chain in an Attractive Spherical Confinement, StatMech Meeting, 19-21 September, Mainz, Germany.

- D8.** Arkin, H., Janke, W., (2012): Conformational Phase Diagram of a Polymer Chain inside an Attractive Sphere, Career in Polymers 2012, 28-30 June, Prag, Czech Republic.
- D9.** Arkin, H, Janke, W., (2012): Structure Formation of a Polymer Chain in an Attractive Sphere, CECAM Workshop, 21-23 May 2012, Paris, France.
- D10.** Arkin, H., Janke, W., (2012): Polymer Chain inside Confinement, Alexander von Humboldt Foundation, Network Meeting, 8-10 February 2012, Kiel, Germany.
- D11.** Arkin, H., Janke W., (2012): Polymer Chain inside an Attractive Sphere, NIC Symposium 2012, 7- 8 February 2012, Jülich, Germany.
- D12.** Arkin, H., (2011): Alexander von Humboldt Foundation, 1<sup>st</sup> Bonn Award Winners Forum Frontiers in Macromolecular and Material Science, 12-16 October 2011, Bonn, Germany.
- D13.** Arkin H., (2011): Simulations of Biological Molecules, SPG Kick-Off Meeting, 24 June 2011, Leipzig, Germany.
- D14.** Alaboz, H. and Arkin H. (2009): Study of the conformational changes of hydrophobic – polar polymer chain near a hydrophobic chain,. MECO34: 34rd Conference of the Middle European Cooperation in Statistical Physics 29 March, 2 April 2009, Leipzig, Germany.
- D15.** Arkin, H. (2008): The energy landscape of Hydrophobic-Polar Protein Model. Conference on Knots and Other Entanglements in Biopolymers: Topological and Geometrical Aspects of DNA, RNA and Protein Structures, 15-19 September 2008, ICTP, Trieste, Italy.
- D16.** Aktürk, E., Gülseren, O., Arkin, H. and Çelik, T. (2008): First Principles Investigation of Amino Acid adsorption on a Surface,. MECO33: 33rd Conference of the Middle European Cooperation in Statistical Physics, 14-16 April 2008, Puchberg-Wels, Austria.
- D17.** Bilsel, M., Arkin, H., (2009): Molecular Modeling of Elastin\_like Polypeptides, 16. Statistical Physics Days, Istanbul Technical University, 25-27 June 2009, Istanbul.
- D18.** Alaboz, H., Arkin, H., (2009): Determination of the Adsorption of Hydrophobic-Polar Models Proteins on Different Surfaces, 16. Statistical Physics Days, Istanbul Technical University, 25-27 June 2009, Istanbul.
- D19.** Arkin, H., (2009): Structural Transitions Mechanism in Protein Models, L'oreal Young Women Scientist Meeting, 16 May 2009, İstanbul, Turkey.
- D20.** Arkin, H., (2007): Generalized Ensemble Simulations of off-lattice Protein Models, Turkish Academy of Sciences Outstanding Young Scientist Annual Meeting, September 2007, Atatürk University, Erzurum, Turkey.

- D21.** Aktürk, E. Gülseren, O., Arkın, H. And Çelik, T. (2006): First Principles Investigation of Amino Acid Adsorption on Si(100)-2x1 Asymmetric Surface, 13. Statistical Physics Days,, 6- 8 July 2006, Boğaziçi University. İstanbul, Turkey
- D22.** Arkın, H. (2005): Simulations of Biological Molecules by Generalized-Ensemble Algorithms. 12. Statistical Physics Days, Istanbul Technical University, 30 June- 2 July 2005, Istanbul.
- D23.** Bachmann, M., Arkın, H. and Janke, W. (2004): Multicanonical Simulations of AB model. Conference on Computational Physics, Cenova, Italya, 31 august- 4 September 2004.
- D24.** Gökoğlu, G., Arkın, H. and Çelik, T. (2004): Multicanonical Simulations of Short Polyalanine Chains. Workshop of Structure and Function of Biomolecules, Poland, 12-15 May 2004.
- D25.** Arkın, H. (2004): Conformational Search Algorithms for All-Atom Protein Models. Workshop of Structure and Function of Biomolecules, Poland, 12-15 May 2004.
- D26.** Bachmann, M., Janke, W. and Arkın, H. (2004): Multicanonical Study of Effective Off-Lattice Models for Heteropolymers. 29<sup>th</sup> Conference of the Middle European Cooperation in Statistical Physics, Bratislava (Slovakia), P1.
- D27.** Bachmann, M., Janke, W. and Arkın, H. (2004): Statistical Properties of Off-Lattice Heteropolymers. Deutsche Physikalische Gesellschaft, Physik Tagungen, Regensburg, Germany, E-Verhandlungen2004.
- D28.** Arkın, H., Çelik, T., Berg, B. A. and Meyer-Ortmanns, H. (1999): Study of Phase Separation in a First-Order Phase Transition. Monte Carlo and Structure Optimization Methods for Biology, Chemistry and Physics, Florida State University, Tallahassee, Florida, February 1999.
- D29.** Arkın, H., Aydın, M., Gündüç, Y. and Çelik, T. (1998): Nucleation vs. Spinodal Decomposition in a First-Order Phase Transition, 5. Statistical Physics Days, Istanbul Technical University, 16-17 July 1998, Istanbul, Turkey.