

ALI NAYERI
CURRICULUM VITAE

Faculty of Physics, School of Computational Sciences

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Chapman University

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Employment:

Assistant Professor

August 2010 - Present Time

Faculty of Physics, School of Computational Sciences

Chapman University

Orange, CA 92866

Lecturer

September 2008 - September 2010

Department of Physics and Astronomy

(Since Sept. 2010 Parttime Lecturer)

High Energy Physics and Cosmology Group

University of California

Irvine, CA 92697

General Member

September 2007 - Present Time

Kavli Institute for Theoretical Physics

University of California

Santa Barbara, CA 93106

Research Associate/Lecturer

September 2004 - September 2007

Department of Physics

Jefferson Physical Laboratory

Harvard University

Cambridge, MA 02138

Research Scientist/Visiting Assistant Professor

September 2002 - August 2004

Institute For Fundamental Theory

University of Florida

Gainesville, FL 32611

Postdoctoral Associate/Research Scientist

September 1999 - August 2002

Center for Theoretical Physics &

Department of Physics

Massachusetts Institute of Technology

Cambridge, MA 02139

Education:

Ph.D.

August 1999

Theoretical Physics

(*Thesis Title: Gravitational Clustering in Different Scenarios;*

Defended at MIT)

IUCAA/MIT

Inter-University Center for Astronomy and Astrophysics

Pune, India

M.S.

June 1995

(Second top in the entrance exam)

Physics

(*Thesis Title: Decrumpling Universe*)

Institute for Advanced Studies in Basic Sciences (IASBS)

Zanjan 45195, Iran

Experience:**• Teaching:**

Chapman University, Orange (2009 - 2016): Modern physics (PHYS 302) in Fall 2009. Astronomy and Cosmology (PHYS 326), Beauty of Physics (PHYS 117) in Spring 2009. General Physics for Life Sciences (PHYS 107) in Fall 2010, General Physics I (PHYS 102), Advance Mechanics (PHYS 320), Introduction to Statics (Math 203) in Spring 2011. General Physics I (PHYS 101) and Seminar/Tour in Theoretical Physics (PHYS 205) in Fall 2011. General Physics II (PHYS 102) and Introduction to Cosmology (PHYS 326) in Spring 2012, General Physics I (PHYS 101) and its Labs (PHYS 101L), General Physics III (PHYS 202) and Science for Future Leaders in Fall 2013. Introduction to String Theory (PHYS 429). General Physics II (PHYS 102) and its Labs (PHYS 102L), Modern Physics (PHYS 202) and Introduction to Cosmology (PHYS 326) in Spring 2014. Fall 2014: General Physics (PHYS 101), General Physics Labs I (PHYS 01L), Classical Mechanics (PHYS 320), Spring 2015: General Physics II (PHYS 102) and Genral Physics Labs (PHYS 102L), Classical Mechanics II (PHYS 321), Fall 2015: General 1 PHYS 101, new design), Electrodynamics I (PHYS 421). Spring 2016: Cosmology (PHYS 326), Electrodynamics II (PHYS 422).

University of California, Irvine (2008 - 2009): Physics I for premed students (Physics 3A) in Fall 2008. Quantum Mechanics (Physics 61 A) for physics students in Winter 2009. Physics III for premed students (Physics 3C) in Spring 2009. Physics 7A for physics students and Physics 3C in Summer 2009. Physics 7A and 7B in Summer Session I and II in Summer 2010.

Harvard (2005 - 2007): Physics I for engineering students (Phys 11a) in Fall 2005 and 2006. Physics II (Phys 11b) in Spring 2006 and 2007. Physics 12c for premed student in summer 2007.

University of Florida (2002 - 2004): Physics I for premedical students (PHYS2053) in Fall 2003 and Spring 2003. In Spring 2003, I taught a mini course on “Cosmological Perturbation Theory” for graduate students at the University of Florida.

MIT (1999- 2002): At MIT, I acted as a substitute lecturer for the courses on “Cosmology” and “General Relativity” for Physics Graduate Students in Fall and Spring semester of 1999 - 2000 and Fall 2001. I have also taught Physics I (8.01) and II (8.02) at MIT during Fall 2001 and Spring 2002.

Iran (1993 - 1995): I taught one full semester basic Physics I for the freshman students during 1993 while I was a graduate student at the Institute for Advanced Studies in Basic Sciences (IASBS), Zanjan, in Zanjan University. I taught Classical Mechanics and Electricity and Magnetism for undergraduates in Azad University, Tehran, Iran. I taught the tutorial class of Prof. B. Mashhoon’s course on “Gravitation” for the first year graduate students at IASBS.

• Supervision:

In Chapman University: Summer of 2014 along with my student we won a SURF grant. In 2011 two undergraduate students did a research for the CU Science Expo in 2011 on applications of quantum physics in medicine. Currently three students are working under my supervision on nanotechnology, physics software development and application of classical physics in psychology. Currently I have a ph.D. Student Jon Inouye who is working towards his doctorate thesis under my supervision.

In UCI, I had an undergraduate student, Michael Girard who worked on his senior thesis

under my supervision. His thesis focused on the role of vector and tensor modes of string perturbation during the Hagedorn phase. Michael senior thesis won the best senior thesis award in the physics department. He is currently a graduate student in UC Berkeley High Energy Physics Group. I also had a graduate student who is doing a project under my supervision on string gas cosmology.

In Harvard, I worked with a graduate student and we publish a paper on gravitational waves in the Hagedorn phase of string gas cosmology.

In the Institute for Fundamental Theory, Florida. A postdoctoral fellow and I published a paper on stability of the Anti-de Sitter spacetime.

At MIT, I have supervised five undergraduate students on their senior theses or on projects in the Undergraduate Research Opportunities Program (UROP). The senior thesis of *Adam Reynolds* was awarded the *Barrett Prize* of the MIT Physics Department. I have also been giving advice to two graduate students for their Ph.D. theses.

In Iran, I supervised numerous high school students on an experiment to measure the fractal dimensions of the crumpled paper spheres.

• Administration:

I have been heavily involved in organizing and arranging scientific activities. Below I list the most important ones:

- Organizer of Physics Colloquia in Chapman University(Fall 2011).
- Co-organizer of the Harvard high energy theory lunch seminars (Fall 2006).
- Co-organizer of the IFT high energy theory seminars (Fall 2003).
- Co-organizer of the IFT theoretical astrophysics seminars (Spring 2003).
- Co-organizer of the Joint CFA/Tufts/MIT Cosmology Seminars (1999-2002).
- Organizer of the weekly meeting on “Brane Cosmology” at MIT (2000-2001).
- Co-organizer of the IPM School on Cosmology, Kish Island, Iran (Winter 1998).
- Local organizer of GR15, IUCAA, India (Fall 1997).
- Co-founder and the first chairperson of the Student Branch of the Iranian Physical Society (1994-1996).
- Co-founder of the Iranian Young Researchers Association (Summer 1990).
- Organizer of small and big meetings, conferences and schools of physics for high school students in Iran (1990 - 1995).

• Refereeing Duties:

I have so far refereed papers for journals such as *Astronomy and Astrophysics*, *Astrophysical Journal Letters*, *European Journal of Physics*, *Physical Review D*, *General Relativity and Gravitation*, *Journal of Cosmology and Astroparticle Physics* and *Journal of Mathematical Physics*. *Journal of Physics Letters A* and *Journal of Quantum Foundations and Mathematics*

• Books

I have written a supplement book titled ”Understanding Physics through Problems” aimed for first year students in physics. The book will be published by Kendall-Hall Publisher in Fall 2012.

- **Computational Skills:**

I know and have programmed in FORTRAN, C and MATHEMATICA. I have written an N-body simulation in FORTRAN, a cosmological radiative transfer code in C, and different codes for calculating Einstein equations, extrinsic curvatures, and perturbations around curved background in MATHEMATICA.

Other Involvements and Extramural:

- Active member of the Union of Concerned Scientists.
- Member of the problem designer committee for the International Physics Olympiad (IPhO) 2007 in Iran.
- I am collaborating with two social scientists at Stanford University and University of Calgary on applying the physics of nonlinear and chaotic systems to social behaviors of different societies.
- I am Co-founder and former Member of Directors of Iranian Studies Group at Massachusetts Institute of Technology in Cambridge. In this regard, I have also been the co-chair of the annual meeting “Iran: Future Prospects, The gathering of the young Iranian Scholars of the North America” at Stanford University, Palo Alto since October 2004.
- Given numerous popular talks on physics, cosmology, quantum physics, cosmology, astrophysics in Boston, Gainesville, and LA for different scientific communities.

Awards:

- Certificate of Congressional Recognition, signed by the Congresswoman Judy Chu, 27th District of California, March 14, 2014.
- California State Senate Certificate of Recognition, signed by the State Senator Carol Liu, March 14, 2014.
- Commendation, City of Pasadena, signed by the Mayor Bill Bougard, march 19, 2014.
- California State Senate Certificate of Recognition
- Nominated for the Who’s Who Among the America’s Teacher, 2005 by students of University of Florida.
- University Grant Commission (UGC) Fellowship for foreign Ph.D. Students, India (1995). This award is given to two foreign national Ph.D. students in physics by the central Government of India.
- Iranian Physical Society award for young researchers, Hamadan, Iran (1990).

Talks:

- “Instability of flat space against quantum conformal fluctuations” ,Perimeter Institute for Theoretical Physics, June 2016
- “String Gas Cosmology with varying speed of light to solve the flatness problem” COSMO 15, University of Warsaw, September 2015
- “String Gas Cosmology and a Possible Explanation of the Blue Tilt in Gravitational Waves” COSMO 14, University of Chicago, August 2014
- “String Gas Cosmology” TEDx Talk, Chapman University, Orange, June 2013
- “Vector Modes from a Primordial Hagedorn Phase of String Cosmology” American Physical Society April Meeting, April 2011
- “Simulating the Universe” Chapman University, California, April 2010
- “Inflationary Features without Inflation: A Stringy Scenario” Joint Particle Seminar, UCI, California, February 2009
- “Inflation Free, Stringy Generation of Scale-Invariant Cosmological Fluctuations in $D = 3 + 1$ Dimensions” KITP, UCSB, California, September 2007
- “Structure Formation in String Gas Cosmology Scenario” Harvard Theory Lunch Seminar, California, November 2006
- “String Cosmology Scenario with Scale-Invariant Spectra” CFA/Tufts/MIT Joint Cosmology Seminar, October 2006
- “Inflation Free, Stringy Generation of Scale-Invariant Cosmological Fluctuations in $D = 3 + 1$ Dimensions” Cambridge University, Cambridge, UK, August 2006
- “Inflation Free, Stringy Generation of Scale-Invariant Cosmological Fluctuations in $D = 3 + 1$ Dimensions” ICTP, Trieste, Italy, August 2006
- “Inflation Free, Stringy Generation of Scale-Invariant Cosmological Fluctuations in $D = 3 + 1$ Dimensions” Institut d’ Astrophysique, Paris, France, June 2006
- “String Cosmology with Scale-Invariant Spectrum” CITA, University of Toronto, January 2006
- “String Cosmology with Scale-Invariant Spectrum” Perimeter Institute, Waterloo, January 2006
- “String Cosmology: A Scenario with Scale-Invariant Spectrum” CFA/Tufts/MIT Joint Cosmology Seminar, Fall 2005
- “Rotating Brane Worlds and Global Rotation of the universe” American Physical Society April Meeting, April 2005
- “Rotating Brane Worlds and Global Rotation of the universe” Texas Symposium, Stanford University, December 2004
- “Rotating Brane Worlds and Global Rotation of the universe” COSMO-04, CITA, University of Toronto, September 2004
- “Rotating Brane Worlds” KITP, University of California, Fall 2003
- “Stability of AdS Spacetime” IFT, University of Florida, Fall 2003
- “Path Integral Duality and Inflation” IFT, University of Florida, Fall 2003
- “Brane Cosmology” Emory Riddle University, Spring 2003
- “Rotating Brane Worlds” IFT, University of Florida, Spring 2003
- “Brane Worlds in Kerr-AdS₅ Background” Coral Gable, Fall 2002
- “Thermal Equilibrium of Brane Worlds” IFT, University of Florida, Fall 2002

- “Brane Embedding” IFT, University of Florida, Fall 2002
- “Brane Embedding” CFA/Tufts/MIT Joint Cosmology Seminar, Spring 2002
- “Brane Worlds and Localization of Gravity” NYU High Energy Physics Seminars, NYU, Spring 2002
- “Brane Cosmology Revisited” Workshop on Cosmology and Structure Formation
LANL, Santa Fe, New Mexico, July 2001

- “Brane worlds in Static and Non-static Bulk and Localization of Gravity” CFA/Tufts/MIT Joint Cosmology Seminar, Spring 2001
- “Brane Worlds with Non-static Bulks” Brown University, Fall 2000
- “Gravitational Clustering in Different Scenarios” University of California, San Diego, September 2000
- “Brane Worlds with Non-static bulks” DPF 2000, Ohio, August 2000
- “Path integral Duality Hypothesis during Inflation” CFA/Tufts/MIT Joint Cosmology Seminar, Spring 2000
- “Path integral Duality hypothesis in the Early Universe” Bartol Research Institute, University of Delaware, Fall 1999
- “Path Integral duality and Inflation” IPM School on Cosmology, Iran, Spring 1999
- “Structure formation in linear and quasi-linear regimes” BCSPIN, Katmandu, Nepal, 1997
- “Statistical Mechanics of Binary Stars” ICTP, Trieste, Italy, Summer 1996
- “Expansion of the Universe as Decrumpling the spacetime” IPM, Anzali, Iran, Fall 1994
- “Dimension Change during the Decrumpling of the universe” International School for Young Astronomers
IUCAA, Pune, India, Spring 1994