

# CURRICULUM VITAE

**Smadar Naoz (formerly Levy)**

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CONTACT INFORMATION	Harvard Smithsonian Center for Astrophysics Institute for Theory and Computation 60 Garden St. Cambridge, MA 02138	<i>phone:</i> (224) 402-3533 <i>E-mail:</i> <a href="mailto:snaoz@ncfa.harvard.edu">snaoz@ncfa.harvard.edu</a> <i>WWW:</i> <a href="http://cfa.harvard.edu/~snaoz/">http://cfa.harvard.edu/~snaoz/</a>
BIOGRAPHICAL INFORMATION	<i>Date of Birth:</i> 28 April 1978	<i>Citizenship:</i> Israel
RESEARCH INTERESTS	Theoretical cosmology, structure formation, large scale structure, globular cluster reionization, cosmological 21 cm line, stellar dynamics, spiral arm dynamics, binary minor planets, extra-solar planets dynamics and formation, the first BHs	
EDUCATION	<b>Tel Aviv University</b> , Tel Aviv, Israel Ph.D. in Physics, approval date: January, 10 2010 <ul style="list-style-type: none"><li>• Advisor: Rennan Barkana</li></ul> <b>Hebrew University of Jerusalem</b> , Jerusalem Israel M.Sc. in Physics, Magna Cum Laude, 2004 <ul style="list-style-type: none"><li>• Advisor: Nir J. Shaviv</li></ul> B.Sc. in Physics 2002	
POSITIONS	<b>Harvard Smithsonian CFA Institute for Theory and Computation</b> Einstein Fellow <i>starting date: September 2012.</i> ITC Fellow <i>September 2011- todate.</i>  <b>Northwestern University, CIERA</b> Gruber fellow <i>September 2010 – September 2011</i> Post-doctoral scholar in theoretical astrophysics, <i>December 2009–September 2010.</i>	
SCHOLARSHIPS HONORS AND AWARDS	<b>Einstein Fellowship</b> , given by NASA, Fall 2011 (starting date Sept. 2012) <b>Hubble Fellowship</b> , given by NASA, Fall 2011 (decline) <b>ITC Harvard prize fellowship</b> Fall 2010 <b>Lyman Spitzer Postdoctoral Fellowship, Princeton University, CITA fellowship and KITP fellowship</b> , Fall 2010 (all decline) <b>The IAU Peter and Patricia Gruber Foundation Fellowship</b> , given by the International Astronomical Union and the Gruber Foundation, 2010 <b>The National Post Doctoral Award Program for Advancing Women in Science</b> , given by Weizmann Institute of Science, 2009. <b>Dan David Prize Scholarship</b> , given by the Dan David Foundation, 2009. <b>Fulbright Post-doctoral Scholar Award</b> , given by the United States-Israel Educational Foun-	

dation - the J. William Fulbright Foreign Scholarship Board, 2009 (decline).

**Northwestern post-doctoral Fellowship**, 2009.

**The John Bahcall Graduate Student Prize**, given by the Tel Aviv University, 2008.

**Levi Eshkol fellowship** recipient, given by the Ministry of Science, Culture & Sport, 2007 (declined).

**The Women Scholarship**, given by the Ministry of Science, Culture & Sport, 2007 (declined).

**The Ilan Ramon Award**, given by the Commercial & industrial club house, 2007.

**The Don and Sara Marejn Scholarship Fund**, 2007.

**School of Physics and Astronomy award for outstanding achievements**, given by the Tel Aviv University, 2006.

**School of physics and Astronomy, Tel-Aviv University research Scholarship** recipient (PhD scholarship), 2004-2009.

**M.Sc Magna Cum Laude**, Hebrew University of Jerusalem 2004

**The Rector's Prize for excellent Master's students**, given by the Hebrew University (top 5% in the science faculty), 2004.

**The Arnold Rosenblum Prize for outstanding achievement as a graduate student in Astrophysics**, given by the Hebrew University, 2003.

**Racah institute of physics, the Hebrew University, research Scholarship** recipient (MSc scholarship), 2002-2004

CONFERENCES /  
SCHOOLS  
PRESENTATIONS

"Extreme Solar System II" Jackson Hole WY, September, 2011 (talk)

"Hydrogen Cosmology Workshop", Cambridge MA USA, May 18-20, 2011 (invited talk)

"CosmoFirstObjects: International Meeting on High-z Cosmology" Marseille, French, May 3-6, 2011 (invited talk)

"IAU Symposium 276 The Astrophysics of Planetary Systems: Formation, Structure, and Dynamical Evolution" Torino, Italy, October 2010 (talk)

"10th Great Lakes Cosmology Workshop " Chicago, IL, June 2010 (talk)

Aspen Winter Conference on Astrophysics, "The High Redshift Universe: A Multi- Wavelength View" Aspen, Colorado, February 2010 (talk).

"Haifa workshop on cosmology and optimal transport", Israel, March, 2009 (talk).

"The 53st Annual Meeting of the Israel Physical Society", Israel, December 2008 (talk).

"Galaxy Evolution workshop", Jerusalem, Israel, June, 2008 (talk).

"HI Survival through Cosmic Times", Italy, June, 2007 (talk).

"The 52st Annual Meeting of the Israel Physical Society", Israel, December 2006 (talk).

Aspen Winter Conference on Astrophysics, "Cosmological Probes of Baryons and Dark Matter", Aspen, Colorado, January 2006 (talk).

"The 51st Annual Meeting of the Israel Physical Society", Israel, December 2005 (talk).

"Reionizing the Universe. The Epoch of Reionization and the Physics of the IGM" Groningen, The Netherlands, June 2005 (poster).

International School of Cosmic Ray Astrophysics 14th Course on "Neutrinos and Explosive Events in the Universe", Erice, Sicily, Italy, July 2004 (talk).

SCIENTIFIC  
COMMUNITY  
SERVICE:

Referee for *Astrophysical Journal*, *Monthly Notices of the Royal Astronomical Society* and *Nature*  
 Member of the ITC Seminar and Colloquium committee 2012-2013  
 Co-Organizer of the ITC-Pizza lunch about Star formation and stellar dynamics, spring 2012  
 Reviewer of the NASA "Origins program"  
 Co-Organizer and SOC of the CIERA Inaugural conference, "The Future of Astronomy: Fellows at the Frontiers of Science"  
 Organizer of the CIERA theory group meetings 2010- -2011  
 Co-Organizer of the CIERA Secular Dynamics Reading Group 2010  
 Organizer and founder of the Tel Aviv University Astrophysics Reading Club (reviewing important paper in the literature), 2008 - 2009.  
 Organizer of the Tel Aviv University student seminar, 2007 - 2009.  
 Co-founder and co-organizer of the Israeli astrophysics and cosmology students conference series (AsCoS)  

- AsCoS I (2008, Weizmann Institute)
- AsCoS II (2009, Tel Aviv university)

MENTORING:

**Jean Teyssandier**, Undergraduate Student, May 2010 - todate, relevant papers:  
 S. Naoz, W. M. Farr, Y. Lithwick, F. Rasio, *J. Teyssandier*, *Nature*, 2011  
 S. Naoz, W. M. Farr, Y. Lithwick, F. Rasio, *J. Teyssandier*, Submitted to *ApJ*  
*J. Teyssandier*, S. Naoz, I. Lizarraga, Y. Lithwick, F. Rasio, , In prep.  
**Ian Lizarraga**, Undergraduate Student, September 2010 - August 2011, relevant paper:  
 J. Teyssandier, S. Naoz, *I. Lizarraga*, Y. Lithwick, F. Rasio, , In prep.  
**Leah A. Iasnman**, Undergraduate Student, June - August 2011  
**Bradley Solomon**, Undergraduate Student, June - August 2010

COLLOQUIA AND  
SEMINARS

"The Origin of retrograde Hot Jupiters"  

- Caltech , CA, USA, March 2012
- University of California, Berkeley , CA, USA, March 2012
- Boston University, MA, USA, October 2011
- ITC Colloquium, Harvard University, MA, USA, March 2011
- MIT, Ma, USA, March 2011
- Weizmann institute, Israel, October 2010
- Northwestern University, IL, USA, October 2010

 "Emerging from the Dark Ages"  

- University of California, Berkeley , CA, USA, March 2012
- Fermilab, Chicago, IL, USA May 2011
- Harvard University, MA, USA, September 2011
- Technion, Haifa, Israel, October 2009

 "The first generation of galaxies and 21cm fluctuations"  

- University of Chicago, IL, USA, January 1010
- Northwestern University, IL, USA, September 2009
- The Institute for the Physics and Mathematics of the Universe, University of Tokyo, Kashiwa, Japan, May 2009
- Weizmann institute, Rehovot, Israel, March 2009
- Caltech, Pasadena, California, October 2008
- UC Berkeley, Berkeley, California, September 2008
- Princeton University, Princeton, New-Jersey, September 2008
- ITC Harvard, Cambridge, MA, October 2008

“The eccentric behavior of binary minor planets”

- Northwestern University, IL, USA, January 1010
- Tel Aviv University, Tel Aviv, Israel, December, 2008
- The Hebrew University of Jerusalem, Jerusalem, June, 2009

“Structure formation in the early Universe”

- Caltech, Pasadena, California, October 2008

“The early generation of galaxies”

- Tel Aviv University, Tel Aviv, Israel, June, 2007
- The Hebrew University of Jerusalem, Jerusalem, Israel, May, 2007

#### TEACHING

Guest Lecture, EPS 351, Northwestern University (Spring 2011)

Guest Lecture, GR course, Northwestern University (Spring 2011)

Teaching assistant in an undergraduate astrophysics course at the Tel Aviv University in the (Spring 2007)

Teaching assistant at the Hebrew University of Jerusalem responsible for the CAPA system (computerized exercise system), 2002-2004

Teaching assistant at the Hebrew University of Jerusalem (during my B.Sc), involving grading exercises and tutoring in the physics club, 2001.

Teaching assistant in physics and mathematics and a *teacher* at the Pre-Academic studies in mathematics at the Jerusalem College of Engineering (I received one of the highest ratings by students at that college) 2000-2002.

Teaching assistant in mathematics (including grading exercises, and frontal teaching) in the Pre-Academic studies (as part of the PERAH Scholarship program) at the Hebrew University of Jerusalem, 1999-2000.

#### OUTREACH AND COMMUNITY ACTIVITY

Tel-Aviv University Astronomy Club. Involving activities and re-writing and expending the “Astropedia” - the Hebrew encyclopedia of space science.

Lecturing in “BASHAR” for youth. Involving lecturing in schools. 2006-2009

An instructor in a physics lab at the “Belamonte science center for Youth” at the Hebrew University of Jerusalem, 2000-2001.

An instructor at the Bloomfield science museum in Jerusalem (involving planning activities), 1999-2002.

An instructor in an after-school Astronomical curriculum activity for kids in grades 1-3 at the “Ramat-Sharet community center, 1999-2000.

PERAH Scholarship program at the Hebrew University of Jerusalem 1999-2000.

#### MILITARY SERVICE

Head meteorologist at the Air Force (head of a group of five meteorologists) Rank: Sargent, 1996-1998.

# PUBLICATIONS

**S. Naoz**, Kocsis, Loeb, Yunes, “Resonant Post-Newtonian Eccentricity Excitation in Hierarchical Three-body Systems” submitted, arXiv:1206.4316 (2012)

**S. Naoz**, W. M. Farr, F. Rasio, “On the Formation of Hot Jupiters in Stellar Binaries” accepted to The Astrophysical Journals–Letters (2012)

**S. Naoz**, N. Yoshida, N. Y. Gnedin, “Simulations of Early Baryonic Structure Formation with Stream Velocity: I. Halo Abundance” The Astrophysical Journals, 747, 128, (2012)

**S. Naoz**, W. M. Farr, Y. Lithwick, F. Rasio, J. Teyssandier “Secular Dynamics in Three-Body Systems” arXiv:1107.2414 (2011)

Y. Lithwick & **S. Naoz** “The Eccentric Kozai Mechanism for a Test Particle” The Astrophysical Journals,, 742, 94 (2011)

**S. Naoz**, W. M. Farr, Y. Lithwick, F. Rasio, J. Teyssandier “Retrograde Hot Jupiters from Secular Planet–Planet Interactions” Nature 473, 187, (2011)

**S. Naoz**, N. Yoshida & R. Barkana ”The nonlinear evolution of baryonic overdensities in the early universe: Initial conditions of numerical simulations” Monthly Notices of the Royal Astronomical Society, 461, 232, (2011)

**S. Naoz** , H. Perets, Ragozzine, D. ”Orbital properties of binary minor planets” The Astrophysical Journals, 719, 1775 (2010) .

**S. Naoz**, R. Barkana & A. Mesinger “Gas in Simulations of High Redshift Galaxies and Mini-Halos” Monthly Notices of the Royal Astronomical Society , 399, 369 (2009).

H. Perets & **S. Naoz** “Kozai cycles, tidal friction and the dynamical evolution of binary minor planets” The Astrophysical Journals Letters, 699, L17 (2009).

**S. Naoz** & R. Barkana, “Detecting Early Galaxies Through Their 21-cm Signature”, Monthly Notices of the Royal Astronomical Society, Letters 385, L63 (2008).

**S. Naoz** & O. Bromberg, “An Observational Limit on the Earliest Gamma Ray Bursts”, Monthly Notices of the Royal Astronomical Society, 380, 757 (2007).

**S. Naoz** & R. Barkana, “The Formation and Gas Content of High Redshift Galaxies and Minihalos”, Monthly Notices of the Royal Astronomical Society, 273, 667 (2007).

**S. Naoz** & N. J. Shaviv, “Open Cluster Birth Analysis and Multiple Spiral Arm Sets in the Milky Way”, New Astronomy, 12, 410 (2007).

**S. Naoz**, S. Noter & R. Barkana, “The First Stars in the Universe”, Monthly Notices of the Royal Astronomical Society, Letters, 373, L98 (2006).

**S. Naoz** & R. Barkana, “Growth of Linear Perturbations before the Era of the First Galaxies”, Monthly Notices of the Royal Astronomical Society, 362, 1047 (2005).

# PAPERS IN FINAL STAGES OF PREPARATION

**S. Naoz**, N. Yoshida, N. Y. Gnedin, “Simulations of Early Baryonic Structure Formation with Stream Velocity: II. Gas Fraction”

**S. Naoz**, N. Y. Gnedin, N. Yoshida, “DC-mode for Small Boxes”

**S. Naoz**, W. M. Farr, Y. Lithwick, F. Rasio, J. Teyssandier "The Origin of Retrograde Hot Jupiter"  
Extreme Solar system II, Jackson hole WY

**S. Naoz**, W. M. Farr, Y. Lithwick, F. Rasio, J. Teyssandier "The Origin of Retrograde Hot Jupiter"  
The Astrophysics of Planetary Systems: Formation, Structure, and Dynamical Evolution IAU Symposium No. 276

**S. Naoz** & N. J. Shaviv, "The dynamics of the Carina spiral arm", Neutrinos and Explosive Events in the Universe, Proceedings of the NATO Advanced Study Institute (Presented at "International School of Cosmic Ray Astrophysics 14th Course" on "Neutrinos and Explosive Events in the Universe", Erice, Sicily, Italy, July 2004).