

Nir Mandelker - Curriculum Vitae

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Languages: **English** (native), **Hebrew** (native), **French** (conversant)

Nationality: American

Education:

Ph.D., Physics

Racah Institute of Physics, Hebrew University of Jerusalem (HUJI)

Focus in theoretical astrophysics

Advisor: Prof. Avishai Dekel

Dissertation: Violent Disc Instability as a Driver of Galaxy Evolution at High Redshift

2011-2016
(expected
06/16)

M.Sc., Physics

Racah Institute of Physics, HUJI

Magna cum Laude

Focus in theoretical astrophysics

Advisor: Prof. Avishai Dekel

Dissertation: Giant Clumps in High-z Disc Galaxies

2009-2011

B.Sc., Double Major in Physics & Mathematics

Faculty of Mathematics and Natural Sciences, HUJI

Magna cum Laude

2006-2009

Teaching Experience:

Teaching Assistant

Racah Institute of Physics, HUJI

- Taught weekly lab and recitation sections in introductory and advanced physics courses
- Taught full lectures in professors' absences
- Assisted in curriculum development
- Graded student homework, lab assignments, and exams

2009-2016

Professional Service:

- **Coordinator, Astrophysics seminar series,**
Racah Institute of Physics, HUJI

- **Coordinator, Cosmology and Galaxy Formation seminar series,**
Racah Institute of Physics, HUJI

2015-2016

2013-2015

Programming Skills:

- Running and analyzing simulations using the ART and RAMSES codes
- Programming in Fortran90, C++, Matlab and LATEX

Outreach and Community Service:

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| • Volunteer scientist in the “Mada Ba-Ktana” (bite-sized science) program, sponsored by HUJI | 2015-2016 |
| • Contributing editor to the Theoretical Physics Digest | |

Military Service:

Aircraft failure and crash investigator & scanning electron microscope operator Failure Analysis Laboratory, Israeli Air Force	2002-2006
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Rank: Master Sergeant

Research Project: Analytical estimation of the number of load cycles leading to fatigue failure

Awards and Honors:

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| • Prof. R. Rahamimoff travel grant for young scientists: BSF | 2015 |
| • Racah prize for outstanding Ph.D. students: Racah Institute of Physics, HUJI | 2015 |
| • Research travel grant: HUJI Authority for R&D | 2014 |
| • Rosenblum Prize for outstanding PhD students in gravitation, astrophysics and cosmology: Racah Institute of Physics, HUJI | 2012 |
| • WorldQuant Scholarship for outstanding PhD students: WorldQuant Foundation | 2012 |
| • Scholarship for excellence: Dept. of physics, HUJI | 2009 |
| • Dean’s List: Dept. of physics, HUJI | 2006-2009 |

Oral Presentations:

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| • Harvard University: ITC Seminar | 09/15 |
| • Columbia University: Astronomy Seminar | 09/15 |
| • Yale University: Galaxy Lunch (astronomy seminar) | 09/15 |
| • Institute for Advanced Studies: Astrophysics Lunch Seminar | 09/15 |
| • UC Santa Cruz: IMPS Seminar | 08/15 |
| • UC Santa Cruz: Galaxy Workshop | 08/15 |
| • IAU General Assembly: Focus Meeting 18, Scale-Free Processes in the Universe | 08/15 |
| • IAU General Assembly: Symposium 319, Galaxies at High Redshift and Their Evolution Over Cosmic Time | 08/15 |
| • UC Santa Cruz: CANDELS Team Meeting | 07/15 |
| • Abbazia di Spinato: IGM@50 Conference, Is the Intergalactic Medium Driving Star Formation? | 06/15 |
| • Technion - Israel Institute of Technology: Workshop in honor of Reinhard Genzel | 04/15 |
| • UC Santa Cruz: Galaxy Workshop | 08/14 |
| • Space Telescope Science Institute: CANDELS Team Meeting | 07/14 |
| • Commissariat a l’Energie Atomique (CEA), Saclay: RAMSES users meeting | 06/14 |
| • Laboratoire d’Astrophysique de Marseille: LAM Cosmology Workshop, Semianalytic Models and Hydrodynamic Simulations | 06/14 |
| • Hebrew University: Fundamental Processes that Shape Galaxies | 03/14 |
| • UC Santa Cruz: Galaxy Workshop | 08/13 |

• UC Santa Cruz: Student talk at UC-HiPACC's 2013 International Summer School on Astro-Computing	08/13
• Institut Astrophysique de Paris: The Origin of the Hubble Sequence Conference	06/13
• Hebrew University: Student talk at The 30 th Jerusalem Winter School in Theoretical Physics on Early Galaxy Formation in LCDM Cosmology	01/13
• Hebrew University: Meeting of the Israeli Physics Society	12/12
• UC Santa Cruz: Galaxy Workshop	08/12

Poster Presentations:

• Oxford University: IAU Symposium 311, Galaxy Masses as Constraints for Formation Models, celebrating the career of Roger Davies	07/14
• Institut Astrophysique de Paris: The Origin of the Hubble Sequence Conference	06/13

Nir Mandelker - Publications

Published

- **Nir Mandelker**, Avishai Dekel, Daniel Ceverino, Dylan Tweed, Christopher E. Moody and Joel Primack,
“The Population of Giant Clumps in Simulated High-z Galaxies: In Situ and. Ex Situ, Migration and Survival”
Monthly Notices of the Royal Astronomical Society (MNRAS) 443, 3675–3702 (2014)
[doi:10.1093/mnras/stu1340](https://doi.org/10.1093/mnras/stu1340)
- Avishai Dekel and **Nir Mandelker**,
“An Analytic Solution for the Minimal Bathtub Toy Model: Challenges in the Star Formation History of High-z Galaxies”
MNRAS 444, 2071–2084 (2014) [doi: 10.1093/mnras/stu1427](https://doi.org/10.1093/mnras/stu1427)
- Adi Zolotov, Avishai Dekel, **Nir Mandelker**, Dylan Tweed, Shigeki Inoue, Colin DeGraf, Daniel Ceverino, Joel Primack, Guillermo Barro, and Sandra M. Faber,
“Compaction and Quenching of High-z Galaxies in Cosmological Simulations: Blue and Red Nuggets”
MNRAS 450, 2327–2353 (2015) [doi: 10.1093/mnras/stv740](https://doi.org/10.1093/mnras/stv740)
- Yicheng Guo, Henry C. Ferguson, Eric F. Bell, David C. Koo, Christopher J. Conselice, Mauro Giavalisco, Susan Kassin, Yu Lu, Ray Lucas, **Nir Mandelker**, and 12 additional coauthors,
“Clumpy Galaxies in CANDELS: I. The Definition of UV Clumps and the Fraction of Clumpy Galaxies at $0.5 < z < 3$ ”
The Astrophysical Journal (ApJ), Volume 800, Issue 1, article id. 39, 21 pp. (2015)
[doi:10.1088/0004-637X/800/1/39](https://doi.org/10.1088/0004-637X/800/1/39)
- Christopher E. Moody, Yicheng guo, **Nir Mandelker**, Daniel Ceverino, Mark Mozena, David C. Koo, Avishai Dekel and Joel Primack,
“Star Formation and Clumps in Cosmological Galaxy Simulations with Radiation Pressure Feedback”
MNRAS 444, 1389–1399 (2014) [doi: 10.1093/mnras/stu1534](https://doi.org/10.1093/mnras/stu1534)
- Daniel Ceverino, Avishai Dekel, **Nir Mandelker**, Frederic Bournaud, Andreas Burkert, Reinhard Genzel and Joel Primack,
“Rotational Support of Giant Clumps in High-z Disc Galaxies”
MNRAS 420, 3490–3520 (2012) [doi: 10.1111/j.1365-2966.2011.20296.x](https://doi.org/10.1111/j.1365-2966.2011.20296.x)
- Emmanuel Hershko, **Nir Mandelker**, George Gheorghiu, Haim Sheinkopf, Izack Cohen and Ofer Levy,
"Assessment of Fatigue Striation Counting Accuracy Using High Resolution Scanning Electron Microscope"
Engineering Failure Analysis, Vol. 15, Issues 1-2, Jan.-Mar. 2008, pp. 20-27 [doi:10.1016/j](https://doi.org/10.1016/j)

Accepted for Publication

- Shigeki Inoue, Avishai Dekel, **Nir Mandelker**, Daniel Ceverino, Frederic Bournaud and Joel Primack
“Non-Linear Violent Disk Instability With High Toomre’s Q in High Redshift Clumpy Disk Galaxies”
[arXiv:1510.07695](https://arxiv.org/abs/1510.07695), accepted to MNRAS on November 25 2015, manuscript ID: MN-15-3446-MJ.R2

Submitted

- **Nir Mandelker**, Avishai Dekel, Daniel Ceverino, Colin DeGraf, Yicheng Guo and Joel Primack,
“Giant Clumps in Simulated High- z Galaxies: Properties, Evolution and Dependence on Feedback”
[arXiv:1512.08791](https://arxiv.org/abs/1512.08791), submitted to MNRAS, manuscript ID: MN-15-4166-MJ.
- Matteo Tomassetti, Avishai Dekel, **Nir Mandelker**, Daniel Ceverino, Sharon Lapiner, Sandra Faber, Omer Kneller, Joel Primack and Tanmayi Sai,
“Evolution of Galaxy Shapes from Prolate to Oblate through Compaction Events”
[arXiv:1512.06268](https://arxiv.org/abs/1512.06268), submitted to MNRAS, manuscript ID: MN-15-4070-MJ
- Sandro Tachella, Avishai Dekel, Marcella C. Carollo, Daniel Ceverino, Colin DeGraf, Sharon Lapiner, **Nir Mandelker** and Joel Primack,
“The Confinement of Star-Forming Galaxies into a Main Sequence through Episodes of Gas Compaction, Depletion, and Replenishment”
[arXiv:1509.02529](https://arxiv.org/abs/1509.02529), submitted to MNRAS, manuscript ID: MN-15-2887-MJ
- Sandro Tachella, Avishai Dekel, Marcella C. Carollo, Daniel Ceverino, Colin DeGraf, Sharon Lapiner, **Nir Mandelker** and Joel Primack,
“Evolution of Density Profiles in High- z Galaxies: Compaction and Quenching Inside-Out”
[arXiv:1509.00017](https://arxiv.org/abs/1509.00017), submitted to MNRAS, manuscript ID: MN-15-2785-MJ

In Preparation

- **Nir Mandelker**, Dan Padnos, Avishai Dekel, Yuval Birnboim, Andi Burkert and Mark Krumholz
“An Analytic Solution of the Kelvin-Helmholtz Instability for a Supersonic Slab: Implications for Cosmic Streams”
Expected submission: January 2016
- Dan Padnos, **Nir Mandelker**, Avishai Dekel, Yuval Birnboim, Andi Burkert and Mark Krumholz
“Non-Linear Evolution of Kelvin-Helmholtz Instabilities in Cosmic Streams”
Expected submission: January 2016
- Avishai Dekel, **Nir Mandelker**, and Frederic Bournaud
“Mass Evolution of Migrating Clumps in VDI Galaxies: A Toy Model versus Simulations”
Expected submission: January 2016
- **Nir Mandelker**, Avishai Dekel, Daniel Ceverino, Mark Krumholz and Joel Primack,
“Compressive Turbulence as a driver of VDI in High- z Disc Galaxies”
Expected submission: March 2016