

# CURRICULUM VITAE

David Benyamin

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## CONTACT INFORMATION

The Hebrew University,  
Racah Institute of Physics  
Giv'at Ram  
Jerusalem, Israel 91904

*phone:* (+972) 54-5330991  
*E-mail:* david.benyamin@mail.huji.ac.il  
*Website:* www.phys.huji.ac.il/~david.benyamin/

## RESEARCH INTERESTS

Particle/high-energy astrophysics, Galactic cosmic-ray production and propagation, Cosmic-ray and neutrino observations, Ultra-high energy cosmic-ray, Particle interactions with fields and matter, X-rays and  $\gamma$ -rays, Nuclear astrophysics, Galaxy structure, Astrophysical plasma kinetics.

## ACADEMIC POSITIONS

**The Hebrew University**, Jerusalem, Israel

Post-doctoral fellow at The Racah Institute of Physics with Prof. Nir Shaviv & Prof. Tsvi Piran, 2016-present

## EDUCATION

**The Hebrew University**, Jerusalem, Israel

Ph.D. in Physics, Advisors: Nir J. Shaviv & Tsvi Piran, thesis title: "Cosmic Ray Diffusion in a Dynamic Milky Way: Implications to Composition, Positron/Electron Ratio and the  $\gamma$ -Ray Sky", 2017

B.Sc. in Chemistry 2014

M.Sc. in Physics, Advisor: Nir J. Shaviv & Tsvi Piran, thesis title: "Cosmic Ray Diffusion in the Inhomogeneous Milky Way: Implication to the Secondary to Primary Ratio.", 2011

B.Sc. in Physics 2008

## CONFERENCE PARTICIPATION

### **ICRC-International Cosmic Ray Conference**

The 34th ICRC-International Cosmic Ray Conference (The Hague, Holland), August 2015.

### **ECRS-European Cosmic Ray Symposium**

The 25th ECRS-European Cosmic Ray Symposium (Torino University, Italy). (Oral presentation "What are the implications of a dynamic spiral-armed particle propagation model on various aspects of Galactic Cosmic Rays?"), September 2016.

The 24th ECRS-European Cosmic Ray Symposium (The Kiel University, Germany). (Poster presentation, "Secondary to Primary Ratios of Nuclei Below  $Z=30$  in a Dynamic Spiral-Armed Cosmic Ray Propagation Model"), September 2014.

### **Wisconsin IceCube Particle Astrophysical Center**

Cosmic Ray Anisotropy Workshop (UW-Madison, Wisconsin, USA). (Oral presentation, "Cosmic Ray Diffusion in a Dynamic Milky Way: Recovering the observed B/C ratio in a spiral-armed cosmic ray propagation model"), September 2013.

### **ISCRA-International School of Cosmic-Ray Astrophysics, Ettore Majorana Centre, Erice, Sicily, Italy**

The 20th Course, Particle, Gamma-ray and Neutrino Astrophysics in the 21st Century. (Oral presentation "What are the implications of a dynamic spiral-armed particle propagation model on various aspects of Galactic Cosmic Rays?"), August 2016.

The 18th Course, A new Era in Particle Astrophysics. (Oral presentation "Cosmic Ray Diffusion in the inhomogeneous Milky Way: Implication to the secondary to primary ratio"), July 2012.

### **Israel Physics Society**

The 61th Annual Meeting of the Israel Physical Society (Bar-Ilan University, Israel), December 2015.

The 60th Annual Meeting of the Israel Physical Society (Ben-Gurion University, Israel), December 2014.

The 59th Annual Meeting of the Israel Physical Society (Tel Aviv University, Israel). (Oral presentation “Cosmic Ray Diffusion in a Dynamic Milky Way: Recovering the observed B/C ratio in a spiral-armed cosmic ray propagation model”), December 2013.

The 58th Annual Meeting of the Israel Physical Society (The Hebrew University, Israel), December 2012.

The 54th Annual Meeting of the Israel Physical Society (Ben-Gurion University, Israel), December 2008.

### **The Institute for Advanced Studies, The Hebrew University, Israel**

The 33th Winter School in Theoretical Physics, “Exoplanets”, January 2016.

Jerusalem Tidal Disruption Events Workshop, November 2015.

The 30th Winter School in Theoretical Physics, “Early Galaxy Formation in LCDM Cosmology”, January 2013.

Solar, Cosmic Rays and Climate Connections Workshop, April 2010.

The 27th Winter School in Theoretical Physics, “Frontiers in High Energy Astrophysics”, January 2010.

### **Italian-Israeli Conference on High Energy Astrophysics**

Photons, Neutrinos and Gravitational Waves: A multi-messenger search of high energy astrophysical sources (Ort Braude College, Israel). (Oral presentation “Cosmic Ray Diffusion in a Dynamic Milky Way: Recovering the observed B/C ratio in a spiral-armed cosmic ray propagation model”), October 2013.

### **I-Core-Israeli Centers of Research Excellence**

High Energy Astrophysics workshop(The Hebrew University, Israel), February 2017.

National Israeli Astronomy Seminar Day(Tel-Aviv University, Israel). (Oral presentation “What are the implications of a dynamic spiral-armed particle propagation model on various aspects of Galactic Cosmic Rays?”), January 2017.

Mini Workshop on Star Formation and Quenching in Galaxies(The Hebrew University, Israel), January 2015.

Transients’ Unsolved Mysteries Workshop(Eilat, Israel). (Poster presentation “Secondary to Primary Ratios of Nuclei Below  $Z=30$  in a Dynamic Spiral-Armed Cosmic Ray Propagation Model”), October 2014.

Israeli - Polish Meeting on Astrophysics(Tel Aviv, Israel), January 2014.

### **IsraSWAPS**

Space Weather and Plasma in Space International workshop (Tel-Aviv University, Israel). (Oral presentation “Cosmic Ray Diffusion in a Dynamic Milky Way: Implications to composition, positrons/electrons ratio and the gamma ray sky”), April 2013.

### **The Hebrew University, Israel**

Mini symposium on cosmic rays. (Oral presentation “Cosmic Ray Diffusion in a Dynamic Milky Way: Implications to composition, positrons/electrons ratio and the gamma ray sky”), January 2014.

SELECTED  
COLLOQUIA AND  
SEMINARS

**“Secondary to Primary Ratios of Nuclei Below  $Z=30$  in a Dynamic Spiral-Armed Cosmic Ray Propagation Model”**

- Berkeley Astronomy Department, University of California-Berkeley, September 2014.
- Division of Astronomy & Astrophysics, University of California-Los Angeles, September 2014.

**“What are the implications of a dynamic spiral-armed particle propagation model on various aspects of Galactic Cosmic Rays?”**

- CCPP-Center of Cosmology and Particle Physics, New-York University, September 2014.

**“Cosmic ray diffusion in a dynamic Milky Way: Recovering the observed B/C ratio in a spiral-armed cosmic ray propagation model”**

- WIPAC-Wisconsin IceCube Particle Astrophysics Center, Department of Astronomy, University of Wisconsin-Madison, September 2013.
- ITC-Institute for Theory and Computation, CFA-Center for Astrophysics, Harvard, September 2013.
- Department of Astrophysical Science, Princeton, September 2013.
- Racah Institute of Physics, The Hebrew University, May 2013.

TEACHING

2011-2016 Teaching assistant at the Hebrew University of Jerusalem,  $\gamma$ -radiation experiment for the senior year physics laboratory.

2011-2012 Teaching assistant at the Hebrew University of Jerusalem, vacuum pumps experiment for the senior year physics laboratory.

2011-2012 Teaching assistant at the Hebrew University of Jerusalem, electromagnetic discharge in vacuum system experiment for the senior year physics laboratory.

PUBLICATIONS

**Nava, L.** , Benyamin, D. , Piran, T. & Shaviv, N. J. “Reconciling the diffuse Galactic  $\gamma$ -ray and the cosmic ray spectra”, Submitted to Monthly Notices of the Royal Astronomical Society.

**Benyamin, D.** , Nakar, E. , Piran, T. & Shaviv, N. J. “Recovering the observed B/C ratio in a dynamic spiral-armed cosmic ray model” 2014, The Astrophysical Journal, 782, 34.

**Benyamin, D.** , Nakar, E. , Piran, T. & Shaviv, N. J. “The B/C and Sub-Iron/Iron Cosmic Ray Ratios-Further Evidence in Favor of the Spiral-Arm Diffusion Model” 2016, The Astrophysical Journal, 826, 47.

SUBMITTED  
PAPERS

**Benyamin, D.** , Piran, T. & Shaviv, N. J. “Electron-Capture Isotopes could Constrain Cosmic-Ray Propagation Models”.

**Shaviv, N. J.** , Benyamin, D. , Murase, K. & Piran, T. “Implications of Smaller Cosmic Ray Halo and Diffusion Coefficient to understanding the Knees and Observed Anisotropy”, Submitted to The Astrophysical Journal Letters.

PAPERS IN FINAL  
STAGES

**Benyamin, D.** , Shaviv, N. J. & Paul, M. “Lower Limits on the Nucleosynthesis of  $^{44}\text{Ti}$  and  $^{60}\text{Fe}$  in the Dynamic Spiral-Arms Model”.

All the papers can be found in <http://www.phys.huji.ac.il/~david.benyamin/papers.htm>