

Gábor Rác

Curriculum Vitae

PERSONAL DETAILS

Institute NASA Jet Propulsion Laboratory, California Institute of Technology
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Citizenship Hungarian

EDUCATION

Doctoral School of Physics (PhD) 2015-2021
Eötvös Loránd University, Budapest
Particle physics and astronomy program
Qualification: summa cum laude
Title of dissertation: Investigating Cosmological Models with Numerical Simulations
Supervisor: László Dobos

Physics MSc. 2013-2015
Eötvös Loránd University, Budapest
Supervisor: István Csabai

Physics BSc. 2009-2013
Eötvös Loránd University, Budapest
Supervisor: István Csabai

PROFESSIONAL EXPERIENCE

NASA Postdoctoral Program fellow 2022-
Jet Propulsion Laboratory, California Institute of Technology
Pasadena, CA, USA
NASA Postdoctoral Program (NPP)
Supervisor: Alina Kiessling

Research fellow 2020-2021
Eötvös Loránd University, Budapest, Hungary
Department of Physics of Complex Systems
Supervisor: Istvan Csabai

Assistant research fellow 2019-2020
Eötvös Loránd University, Budapest, Hungary
Department of Physics of Complex Systems
Supervisor: Istvan Csabai

Visiting postgraduate student 2019/03-2019/04
University of Hawaii, Honolulu, HI, USA
Institute for Astronomy (IfA)
Supervisor: István Szapudi

Visiting postgraduate student

2018/01-2018/06

Johns Hopkins University, Baltimore, MD, USA

Department of Physics and Astronomy

Supervisor: Alexander S. Szalay

TEACHING EXPERIENCE

Computer Simulations

2018-2020

Eötvös Loránd University, Budapest

~ 15 student per semester

Computer-Aided Modeling Laboratory

2015-2019

Eötvös Loránd University, Budapest

~ 5 student per semester

Digital Measurements Laboratory

2015-2018

Eötvös Loránd University, Budapest

~ 10 student per Lab session

COLLABORATION INVOLVEMENT

Euclid Consortium

2022-

*Member**Paper Lead: "Euclid preparation TBD: Results from non-standard simulations"*

2023-

PAST FUNDING

Faculty Excellence Sponsorship

2019

Eötvös Loránd University, Faculty of Science

for supporting high quality publishing activities

1,000,000HUF

Campus Mundi Scholarship

2019

Tempus Public Foundation

for short-term international internship

536,960HUF

SKILLS

Programming

C/C++, C#, CUDA, Python, Julia, Bash

Experience

large HPC systems

general purpose programming of Graphical Processing Units (GPUs)

cosmological and astrophysical simulations (GADGET, Gizmo, Arepo, StePS)

*Software*GNU/Linux and UNIX systems, git, L^AT_EX, GNU octave,

MATLAB and gnuplot

PROFESSIONAL REFERENCES

Alina Kiessling

*NASA Jet Propulsion Laboratory,
California Institute of Technology*
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Prof. István Szapudi

*Institute for Astronomy
University of Hawai'i*
2680 Woodlawn Dr,
Honolulu,
HI 96822
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Prof. Alexander S. Szalay

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Astronomy
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László Dobos

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Prof. István Csabai

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Eötvös Loránd University*
Pázmány Péter sétány 1/A
Budapest
H-1117 Hungary
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LIST OF PUBLICATIONS

- **Complementary Cosmological Simulations**, 2023 G. Rácz, A. Kiessling, I. Csabai, I. Szapudi *Astronomy & Astrophysics* 672, A59
- **An empirical nonlinear power spectrum overdensity-response**, 2022, G. Rácz, I. Szapudi, I. Csabai, L. Dobos *Astronomy & Astrophysics* 661, A96
- **The anisotropy of the power spectrum in periodic cosmological simulations**, 2020, G. Rácz, I. Szapudi, I. Csabai, L. Dobos *Monthly Notices of the Royal Astronomical Society* 503 (4), 5638–5645
- **A common explanation of the Hubble tension and anomalous cold spots in the CMB**, 2020, A. Kovács, R. Beck, I. Szapudi, I. Csabai, G. Rácz, L. Dobos *Monthly Notices of the Royal Astronomical Society* 499 (1), 320-333
- **StePS: A Multi-GPU Cosmological N-body Code for Compactified Simulations**, 2019, G. Rácz, I. Szapudi, L. Dobos, I. Csabai, A. S. Szalay *Astronomy and Computing* 28, [100303].
- **The integrated Sachs-Wolfe effect in the AvERA cosmology**, 2018, R. Beck, I. Csabai, G. Rácz, I. Szapudi *Monthly Notices of the Royal Astronomical Society* 479, 3582-3591
- **Compactified Cosmological Simulations of an Infinite Universe**, 2018, G. Rácz, I. Szapudi, I. Csabai, L. Dobos *Monthly Notices of the Royal Astronomical Society* 477, 1949-1957
- **Concordance cosmology without dark energy**, 2017, G. Rácz, L. Dobos, R. Beck, I. Szapudi, I. Csabai *Monthly Notices of the Royal Astronomical Society: Letters* 469 (1), L1-L5

- **Main-belt Asteroids in the K2 Engineering Field of View**, 2015, R. Szabó, K. Sárnecky, Gy. M. Szabó, A. Pál, Cs. P. Kiss, B. Csák, L. Illés, G. Rácz, L. L. Kiss *The Astronomical Journal* 149 (3), 112

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