Alba Kalaja

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Research Experience

Ph.D. Candidate May 2019 - present
Van Swinderen Institute, University of Groningen

- Main topics of interest: primordial non-Gaussianity, CMB lensing, cosmic shear.

  Supervisor: P. D. Meerburg.
- Member of the Simons Observatory collaboration.

Erasmus+Traineeship and Visiting position 2018 - 2019
Institute of Cosmos Sciences (ICC), University of Barcelona

- Research project on primordial black holes (PBHs): provided new constraints on the primordial curvature power spectrum from the latest limits on PBHs abundance.

  Supervisors: Alvise Raccanelli, Licia Verde, Nicola Bartolo, Sabino Matarrese.

Education & Degrees

Ph.D. Physics May 2019 - present
Van Swinderen Institute, University of Groningen

- Supervisor: P. D. Meerburg.

M.Sc. Theoretical Physics 2016 - 2018
University of Padua

- Focus on theoretical physics, cosmology and astrophysics. Final grade: 110/110 *cum laude*.
- Master thesis title: "Primordial Black Holes from Inflation".
- Supervisors: Nicola Bartolo, Alvise Raccanelli, Sabino Matarrese.

B.Sc. Physics 2013 - 2016
University of Padua

- Bachelor thesis title: "Gravitational Instability via the Schrödinger equation".
- Advisor: Sabino Matarrese.

Programming skills

Programming languages	Python, cython, fortran
Software libraries	TensorFlow, multiprocessing, numba, vegas, `CAMB`, healpy
Software & tools	Mathematica, LaTeX
Version control	Git

Publications

1. Namikawa T. *et al.* (**Kalaja A.**), "Simons Observatory: Constraining inflationary gravitational waves with multitracer B-mode delensing" - *Phys.Rev.D* 105 (2022) 2, 023511
2. **Kalaja A.**, Meerburg P. D., Pimentel G. L., Coulton W. R., "Fundamental limits on constraining primordial non-Gaussianity" - *JCAP* 04 (2021) 050
3. **Kalaja A.**, Bellomo N., Bartolo N., Bertacca D., Matarrese S., Musco I., Raccanelli A., Verde L., "From Primordial Black Holes Abundance to Primordial Curvature Power Spectrum (and back)" - *JCAP* 10 (2019) 031

Talks & Posters

Selected talks

Fundamental limits and challenges in measuring non-Gaussianity — Oct 2021
Cosmology Seminars, Department of Physics, Tokyo Institute of Technology (remote)

Fundamental limits on constraining primordial non-Gaussianity — June 2021
Cosmology from Home conference (remote)

From Primordial Black Holes Abundance to Primordial Curvature Power Spectrum — Oct 2019
Dutch Theoretical Cosmology meeting, Groningen

Constraining the Early Universe with Primordial Black Holes — May 2019
Cosmology Journal Club, DAMPT Cambridge University

Posters

The reconstruction of the CMB lensing bispectrum — Jan 2022
56th Rencontres de Moriond

From Primordial Black Holes Abundance to Primordial Curvature Power Spectrum — Sept 2019
COSMO19, RWTH Aachen University

Workshops & Symposia

Chair at the *Fundamentals of the Universe symposium*, Groningen — April 2022

Panelist in the discussion session on Primordial Black Holes — Nov 2019
Workshop on Gravitational Wave Probes of Fundamental Physics, Amsterdam

Teaching Experience

Quantum Physics 1 for Physics and Astronomy Degrees - AY 2019/20, 2020/21
University of Groningen

Advanced Mechanics for Physics and Astronomy Degrees - AY 2020/21, 2021/22
University of Groningen

Roles and Events

- Mentor for the Fundamental of the Universe PhD programme.
- Dutch Research School of Theoretical Physics (DRSTP) PhD council member.
- Vice-president of EPS Young Minds, Groningen section, 2019-2021.
- Co-organizer of the national PhD day (Utrecht, Netherlands), November 2021.
- Co-organizer of *International Day of Girls and Women in Science*, 11 February 2021 (remote).