

Alba Kalaja

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EDUCATION & DEGREES

PH.D. PHYSICS

May 2019 - present

Van Swinderen Institute, University of Groningen

- Supervisor: P.D. Meerburg.

M.SC. THEORETICAL PHYSICS

Dec 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

Dec 2016

University of Padua

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

RESEARCH EXPERIENCE

PH.D. CANDIDATE

May 2019 - present

Van Swinderen Institute, University of Groningen

- Main topics of interest: information content of cosmological correlation functions, weak gravitational lensing, reconstruction of the CMB lensing bispectrum and cross-correlation with cosmic shear.
Supervisor: P.D. Meerburg.
- Member of the Simons Observatory collaboration.

VISITING STUDENT

Jan - Apr. 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 PBH abundance using an accurate modelling of non-linearities, filtering and typical perturbation profile.
Main supervisors: Nicola Bellomo, Alvise Raccanelli, Licia Verde, Nicola Bartolo, Sabino Matarrese.

MASTER STUDENT, ERASMUS+TRAINEESHIP

June - Aug. 2018

Institute of Cosmos Sciences (ICC), University of Barcelona

- Awarded a Erasmus+Traineeship scholarship to work on the master thesis project.

PROGRAMMING SKILLS

Programming languages

Python, Cython

Software & tools

Mathematica, L^AT_EX

Version control

Git

MAIN PUBLICATIONS

1. **Kalaja A.**, Meerburg P. D., Pimentel G. L., Coulton W. R., “Fundamental limits on constraining primordial non-Gaussianity” - JCAP04(2021)050 - arXiv:2011.09461
2. **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)” - JCAP10(2019)031 - arXiv:1908.03596

TALKS & POSTERS

Talks

1. *Fundamental limits and challenges in measuring non-Gaussianity* Oct 2021
Cosmology Seminars, Department of Physics, Tokyo Institute of Technology
2. *Fundamental limits on constraining primordial non-Gaussianity* June 2021
Cosmology from Home conference
3. *Fundamental limits on constraining primordial non-Gaussianity* Nov 2020
Padova Cosmology journal club, University of Padova
4. *Limitations on Bispectrum Measurements from CMB and LSS* Feb 2020
Dutch Research School of Theoretical Physics, Dalfsen
5. *Invited panelist in the discussion session on Primordial Black Holes* Nov 2019
Workshop on Gravitational Wave Probes of Fundamental Physics, Amsterdam
6. *From Primordial Black Holes Abundance to Primordial Curvature Power Spectrum* Nov 2019
GRAPPA Seminar, GRAPPA Institute, Amsterdam
7. *From Primordial Black Holes Abundance to Primordial Curvature Power Spectrum* Oct 2019
Invited talk at the Dutch Theoretical Cosmology meeting, Groningen
8. *Constraining the Early Universe with Primordial Black Holes* May 2019
Cosmology Journal Club, DAMPT Cambridge University
9. *Constraining the Early Universe with Primordial Black Holes* Mar 2019
ICCUB Seminar, University of Barcelona

Posters

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

TEACHING EXPERIENCE

Quantum Physics 1 for Physics and Astronomy Degrees - Sept-Nov 2019, Sept-Nov 2020
University of Groningen

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

MENTORING AND OUTREACH

- I am a mentor for the Fundamental of the Universe PhD programme.
- *International Day of Girls and Women in Science*, 11 February 2021: webinar co-organized with the EPS Young Minds Groningen section.