Alba Kalaja

Van Swinderen Institute for Particle Physics and Gravity
University of Groningen
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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, CMB lensing reconstruction, convergence 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 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 master thesis project.

Programming skills

Programming languages	Python, Cython
Software & tools	Mathematica, LaTeX
Version control	Git

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

Posters

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

Teaching Experience

Teaching Assistant - *Quantum Physics 1* for Physics and Astronomy Degrees - Sept-Nov 2019, University of Groningen

Teaching Assistant - *Quantum Physics 1* for Physics and Astronomy Degrees - Sept-Nov 2020, University of Groningen

Teaching Assistant - *Advanced Mechanics* for Physics and Astronomy Degrees - Nov-Jan 2020/21, University of Groningen

Outreach Activities

- *International Day of Girls and Women in Science*, 11 February 2021: webinar co-organized with the EPS Young Minds Groningen section.