

Postdoctoral Research Associate at Durham University

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Employment

Postdoctoral Researcher, Institute for Computational Cosmology, Durham, UK **Since 2023**

Education

PhD in Astrophysics, University of Surrey, Guildford, UK **2019 – 2023**

Supervisors: Denis Erkal, Justin Read

Topic: The Effect of Deforming Dark Matter Halos on Stellar Streams.

Master of Science (M.Sc.) in Physics, University of Heidelberg, Germany **2016 – 2019**

Supervisors: Wilma Trick, Glenn van de Ven

Title: Adaptive Dynamics – can Actions of Globular Clusters Constrain the Gravitational Potential of Galaxies?

Thesis carried out at the European Southern Observatory (ESO), Garching bei München, Germany

Bachelor of Science (B.Sc.) in Physics, University of Heidelberg, Germany **2012 – 2016**

Supervisors: Wilma Trick, Paolo Bianchini, Glenn van de Ven

Title: Hunting for Intermediate-Mass Black Holes in Simulated Globular Clusters Using Integrals of Motion.

Thesis carried out at the Max Planck Institute for Astronomy (MPIA), Heidelberg, Germany

Research Positions

Pre-doctoral Research Fellow, CCA, Flatiron Institute, NYC, US **2022**

Pre-doctoral Guest Researcher, ICRAR / UWA, Perth, Australia **2019**

Trainee, European Space Astronomy Center, Madrid, Spain **2017**

Publications

Published

5. The effect of the deforming dark matter haloes of the Milky Way and the Large Magellanic Cloud on the Orphan-Chenab stream
S. Lilleengen et al., 2023 (doi:10.1093/mnras/stac3108)
4. S^5 : Probing the Milky Way and Magellanic Clouds potentials with the 6-D map of the Orphan-Chenab stream
S. Koposov et al. (including **S. Lilleengen**), 2023 (doi:10.1093/mnras/stad551)
3. Streams on FIRE: Populations of Detectable Stellar Streams in the Milky Way and FIRE
N. Shipp et al. (including **S. Lilleengen**), 2023 (doi:10.3847/1538-4357/acc582)
2. How do the dynamics of the Milky Way - Large Magellanic Cloud system affect gamma-ray constraints on particle dark matter?
C. Eckner et al. (including **S. Lilleengen**), 2023 (doi:10.1093/mnras/stac3340)

1. Measuring the Mass of the Large Magellanic Cloud with Stellar Streams Observed by S^5
N. Shipp et al. (including **S. Lilleengen**), 2021 (doi:10.3847/1538-4357/ac2e93)

Submitted

1. Action and energy clustering of stellar streams in deforming Milky Way dark matter haloes
R. Brooks, J. L. Sanders, **S. Lilleengen** et al. (arXiv:2401.11990)

Conference Proceedings

1. Accreted Globular Clusters in external galaxies: Why adaptive dynamics is not the solution
S. Lilleengen, W. H. Trick, G. van de Ven,
2020, IAUS353 "Galactic Dynamics in the Era of Large Surveys"

Presentations

- **Contributed Talk** at "The Milky Way is not an island", Sexten, IT, 01/2024
- **Invited Seminar** at University College London, UK, 10/2023
- **Contributed Talk** at "Towards unified sub-grid prescriptions for galaxy modeling", Lorentz Center Workshop, Leiden, NL, 09/2023
- **Contributed Talk** at "Liverpool Galactic Archaeology workshop", Liverpool, UK, 07/2023
- **Contributed Talk** at "IAUS379: Dynamical Masses of Local Group Galaxies", Potsdam, DE, 03/2023
- **Friday Lunchtime Astrophysics Talk** at Durham University, UK, 03/2023
- **Astronomy Seminar** at Stony Brook University, US, 11/2022
- **Tea Talk** at Carnegie Observatories, Pasadena, US, 11/2022
- **KIPAC Cosmology Seminar** at KIPAC, Stanford, US, 11/2022
- **Invited Talk** at "Towards Real-Time Galactic Dynamics" Lorentz Center Workshop, Leiden, NL, 07/2022
- **Pre-Doc Symposium** at Flatiron Institute, NYC, US, 06/2022
- **CCA Lunch Talk** at Flatiron Institute, NYC, US, 06/2022
- **Special KICP Seminar** at University of Chicago, US, 06/2022
- **Brown Bag Lunch Talk** at MIT, US, 05/2022
- **Invited Seminar** at Institute of Astronomy (Cambridge) Dynamics Group, virtual / Cambridge, UK, 12/2021
- **Contributed Talk** at "EAS21, S1: A holistic view of the Milky Way: linking ages, chemistry and kinematics", virtual / Leiden Observatory, NL, 06/2021
- **Contributed Talk** at "Streams21: Constraints on Dark Matter", virtual / Flatiron Institute, NYC, US, 02/2021
- **Contributed Talk** at "IAUS353: Galactic Dynamics in the Era of Large Surveys", Shanghai, CN, 07/2019
- **Contributed Talk** at "Survival of Dense Star Clusters in the Milky Way System", Heidelberg, DE, 11/2018

- **Poster with Flash Talk** at “The formation of globular clusters at high and low redshift”, Sexten, IT, 07/2018
- **Contributed Talk** at “SFB Workshop: Star Clusters - Dynamics and Observations”, Heidelberg, DE, 06/2016

Prizes and Awards

Physics Developing Talent Award, Durham University, 2024

Physics Postgraduate Research Student of the Year, University of Surrey, 2022

Excellence Award of the German Association for Physics, 2012

Collaborations Member

Basis function expansion (B-BFE) Collaboration, a Center for Computational Astrophysics-led collaboration developing a holistic approach to galaxy evolution using basis function expansions.

Southern Stellar Stream Spectroscopic Survey (S⁵) Collaboration, a collaboration to map the kinematics and chemistry of stars in stellar streams in the Southern sky using the Anglo-Australian Telescope.

DESI Collaboration, member of the Milky Way Survey working group.

Conference & Workshop Organisation

Co-Chair, Streams24: The Theory Edition, Durham University, 2024

SOC member, Galactic Archaeology with old stellar populations, NAM, 2023

Co-Organiser, REACH Research Culture Week, virtual / University of Surrey, 2020

Co-Organiser, New Horizons Doctoral College Conference, virtual / University of Surrey, 2020

Principal Organiser, Population Dynamics Collaboration Workshop, Riquewihr, France, 2018

Teaching & Mentoring

Demonstrator, Scientific Computing and Machine Learning, Durham University, 2023

Mentor to first-year Electronic Engineering PhD student, 2020 – 2021

Teaching Assistant, Mathematical & Computational Physics, University of Surrey, 2020

Service

Peer Reviewer for Monthly Notices of the Royal Astronomical Society (MNRAS)

Public Outreach

Volunteer at astronomy evenings, University of Surrey, Guildford, UK, 2019

Planetarium Presenter at ESO Supernova, Garching bei München, Germany, 2018 – 2019

Outreach Talks at secondary schools, 2017 – 2019