

NEIGE FRANKEL

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EDUCATION

PhD Astrophysics, IMPRS Heidelberg, Germany	2020
MSc degree of Astrophysics, Lund University, Sweden (<i>passed with distinction</i>)	2017
BSc degree of Physics, Université Paul Sabatier, Toulouse, France (<i>passed with distinction</i>)	2015

APPOINTMENTS

Postdoc Fellow (at CITA and Faculty of A&S), Toronto, Canada	2021-2026
Graduate Student, MPIA Heidelberg, Germany	2017-2020
Summer Research Student, Lund University, Sweden	Jun - Aug 2016

RESEARCH

<i>Forward Modelling the Secular Evolution of the Milky Way Disk</i>	2017-21
PhD thesis , IMPRS Heidelberg. Advisor: Prof. Hans-Walter Rix	
Data from spectroscopic surveys of stars and the Gaia space mission now can determine the distributions of stellar orbits, ages, and composition across our Milky Way, constraining its dynamical evolution. However, astrophysical conclusions require the development of stringent forward-models for these large data sets of $10^4 - 10^6$ stars, accounting e.g. for measurement uncertainties and selection effects. I have set-up and successfully applied such a machinery, revealing strong orbit evolution across the Galaxy.	
<i>Nucleosynthesis in Accretion Disks Around Black Holes</i>	2016-17
Master thesis , Lund University, Sweden. Advisor: Prof. Melvyn B. Davies	
<i>Optimum Scheduling for Transit Timing Variations (TTV) Measurements</i>	Jun – Aug 2016
Summer Research Student, Lund University, Sweden. Advisor: Dr. Alexander J. Mustill	
<i>The Effect of Binary Stars on the Space-velocity Distribution of Pulsars</i>	Jan– May 2015
BSc Internship, Lund University, Sweden. Advisor: Dr. Ross P. Church	

AWARDS, GRANTS, & SCHOLARSHIPS

Wilma Moser Prize for the two youngest doctoral students with a summa cum laude grade within the Combined Faculty of Mathematics and Natural Sciences at Heidelberg University	2021
Patzer Prize (for excellent publication, awarded to 3 early careers at MPIA/ZAH)	2020
IMPRS Scholarship Stipend (awarded to 2 students at IMPRS)	2017
Erasmus grant (<i>Erasmus agreement Toulouse-Lund created and signed under my initiation</i>)	2015
Bourse au Merite (<i>Award for outstanding grades in Baccalaureate exam</i>)	2012

REFEERED PUBLICATIONS

- **1st Author**

Frankel, Sanders, Ting, Rix (2020), [Keeping it Cool: Much Migration, yet Little Heating, in the Galactic Disk](#), ApJ, 895, 15-34

Frankel, Sanders, Rix, Ting, Ness (2019), [The Inside-out Growth of the Galactic Disk](#), ApJ, 884, 99-116

Frankel, Rix, Ting, Ness, Hogg (2018), [Measuring Radial Orbit Migration in the Galactic Disk](#), The Astrophysical Journal, 865, 2, 96-115.

- **Contributing Author**

Zari, Rix, Frankel & al., (2021) [Mapping Luminous Hot Stars in the Galaxy](#)

Spina, Ting, de Silva, **Frankel** & al., (2021) [The GALAH Survey: Tracing the Galactic Disk with Open Clusters](#)

Eilers, Hogg, Rix, **Frankel** &3 (2020), [The Strength of the Dynamical Spiral Perturbation in the Galactic Disk](#), ApJ, 900,2, 186-206

Maire, Molaverdikhani, Desidera, Trifonov, Molliere, D’Orazi, **Frankel** &38 (2020), [Orbital and spectral characterization of the benchmark T-type brown dwarf HD 19467B](#), A&A 639, 1-26

Feuillet, **Frankel**, Lind, Frinchaboy, Garcia-Hernandez, Lane, Nitschelm, Roman-Lopez (2019), [Spatial variations in the Milky Way disc metallicity-age relation](#), MNRAS, 489, 2, 1742-1752

TOOLS PUBLICLY AVAILABLE

[APOGEE-DR14 selection function](#) with a [tutorial](#) of its use with practical examples

TECHNICAL STRENGTHS

Computer Languages	Python (current project), C++ (MSc thesis), Matlab (courses)
Editing/version control	Vim, Gedit, Latex, Gnuplot, git
Codes & Packages used	PyTorch (Artificial neural nets in Python – used in published work) Galpy, AGAMA (galactic dynamics, used in published work) BSE, TTVFast (used in research projects) RADMC, Zeltron, RAMSES (1-day training each in Astrosim 2017)

TRAINING, SUMMER SCHOOLS & HANDS-ON WORKSHOPS

Ringberg workshop, Germany – <i>Machine Learning in Astronomy</i>	2019
Shanghai, China – <i>Gaia-LAMOST hack-a-thon</i>	2018
Heidelberg, Germany – <i>Gaia data & science summer school</i>	2018
Flatiron institute, New York, USA – <i>Gaia Sprint</i>	2018
Penn-State, USA – <i>Astrostatistics summer school</i>	2018
Moletai Observatory, Lithuania – <i>Europlanet international research summer school</i>	2017
Ecole Normale Supérieure de Lyon, France – <i>Astrosim: Numerical Astrophysics</i>	2017
University of Savoie, France – <i>Particle physics, gravitational waves, CERN</i>	2016
Universities of Orsay and Saclay, Paris, France – <i>Astroparticle physics, cosmology</i>	2015

TALKS & SEMINARS

EAS meeting – <i>Milky Way Analogs in TNG50: (what) can we learn from the bar?</i>	2021
Strasbourg Observatory – <i>Fitting the Secular Evolution of the Milky Way Disk</i>	2021
INAF, L. Bassi series – <i>What Sets the Structure of the MW Disk? Insight from Gaia and TNG50</i>	2021
Heidelberg, MPIA GCTheory – <i>What Sets the Structure of Bars in TNG50’s MW Analogs?</i>	2021
Heidelberg, ECOGAL meeting – <i>What Drives the Evolution of Simulated Milky Way-like Disks?</i>	2021
ESO seminar – <i>Inferring the Dynamical Structure of the Milky Way Disk</i>	2020
Barcelona, ICCUB seminar – <i>Seeing the Galactic Disk Evolve</i>	2020
Harvard, CfA seminar – <i>Seeing the Galactic Disk Evolve</i>	2020
Patzer Prize Colloquium – <i>Keeping it Cool: Much Migration, yet Little Heating, in the MW Disk</i>	2020
Harvard, group meeting (Hernquist) – <i>What Sets the Radial Structure of the Milky Way Disk?</i>	2020
EAS virtual meeting – <i>Measuring Radial Migration with Gaia and APOGEE</i>	2020
Aarhus, virtual seminar – <i>Seeing the Galactic Disk Evolve with Red Clump Stars</i>	2020
Birmingham, Stars Group meeting – <i>What Sets the Radial Structure of the Galactic Disk?</i>	2020
Cambridge UK, IoA, Galaxy Evolution Discussion Seminar – <i>Seeing the Milky Way Disk Evolve</i>	2020
Cambridge UK, IoA, MW meeting – <i>Modelling the Disk: Dynamics, Chemistry & Supernovae</i>	2020
Heidelberg, MPIA seminar – <i>The Dynamical Evolution of the Milky Way Disk is Cool</i>	2020
Paris Observatory, GEPI seminar – <i>Seeing the Milky Way Disk Evolve</i>	2019
Stuttgart AG meeting – <i>Building a Global Model for the Secular Evolution of the Galactic Disk</i>	2019
Lund Observatory, whiteboard talk – <i>Evolution of Galaxy Disks: What the MW Can Do for You</i>	2019

Kloster Schontal, MPIA retreat– <i>How to Make a Galaxy Disk in Three Steps: the Milky Way</i>	2019
Shanghai, <i>The Life and Times of the Milky Way – Measuring Radial Migration in the MW Disk</i>	2018
Besancon, APOGEE2 meeting – <i>Obtained Direct Measure of Radial Migration with APOGEE</i>	2018
Lund, ‘ <i>Dynamical Universe for All</i> ’ – <i>What Sets the Radial Structure of the Milky Way Disk?</i>	2018
Heidelberg MPIA, seminar – <i>What Sets the Radial Structure of the Milky Way Disk?</i>	2018
Lund University, MSc defence – <i>Nucleosynthesis in Accretion Disks Around Balck Holes</i>	2017
Lund Observatory, whiteboard talk – <i>Optimum Scheduling for TTV Measurements: WASP-47</i>	2016
Toulouse, BSc Talks– <i>The Effect of Binarity on the Space-velocity Distribution of Pulsars</i>	2015

STUDENT SUPERVISION

Summer MSc student Domenica Garzone	2021
<i>Mapping the birth places of young stars in the Milkt Way’s disk</i>	
Winter BSc student intern Audrey Destarac	2019
<i>Characterizing observational orbital signatures of black hole – star binaries</i>	

TEACHING

Academic teaching / tutoring

Introduction to Astronomy and Astrophysics Tutor, Heidelberg University WS 2019-20

Individual teaching / support / preparation to competitive exams (France)

<i>Physics & Chemistry</i> focused preparation for science baccalaureate (high school, successful)	2014-15
<i>Mathematics</i> weekly support of middle school student in need	2012-15
<i>Physics</i> support for technical baccalaureate (high school) student	2014
<i>Chemistry</i> specific preparation for vocational baccalaureate (high school, successful exam)	2013

COMMUNITY INVOLVEMENT AND MENTORSHIP

Peer-reviewer, MNRAS	2021-
Co-organizer of the Early Career session at EAS meeting	2021
Annual talk promoting scientific studies, High school Lycee Pierre d’Aragon, France	2013-18
Student ambassador in Astronomy, Lund University, Sweden	2016-17
Initiation of the Erasmus agreement connecting Toulouse (FRA) - Lund (SWE) physics	2015
Student volunteer at annual INFOSUP exhibition (choice of study/career) Toulouse, France	2012-14

PUBLIC OUTREACH

Founder & President of ALVA Student Astronomy Club , Lund University, Sweden	2015-16
Volunteer at KulturNatten (Culture Night), Lund Observatory, Sweden	2015-16
Vice-president of UPS in Space Student Astronomy Club , Toulouse University, France	2014

UNIVERSITY / DEPARTMENTAL SERVICE

LOC Galdark meeting, Heidelberg, Germany	2017
Initiator and organiser at Lund University, Sweden:	2015-16
- Meeting MSc – PhD students: PhD applications, experience and career choices	
- Workshop and hacking session with fellow MSc students: <i>Computing</i>	
- Workshop and hacking session with fellow MSc students: <i>Statistics</i>	