



Call for a PhD position
Applications are open now

**A high-resolution infrared view of the complex inner regions
of planet-forming protoplanetary disks**

Project:

Planet formation in young stellar systems is nowadays a clearly identified evolutionary path in the cycle of matter from large to small scales. Such processes seem to occur predominantly in the circumstellar disks surrounding pre-main sequence stars much younger than 10 Myr. Multi-wavelength and multi-technique approaches involving high-spectral and high-angular resolution observations are required for a comprehensive understanding of planet formation in disks. As part of this comprehensive approach, the exploration of the inner astronomical units of protoplanetary disks requires observations using VLT interferometry.

Goals:

As a follow-up of the GRAVITY YSO Survey, the topic of this PhD will focus on the exploitation of existing high-resolution data from GRAVITY and MATISSE, as well as from GRAVITY(+), to constrain the ejection/accretion processes driving the star-disk interactions and to exploit the temporal baseline of our observations to probe to the temporal variability of the highly dynamic inner regions of the disk. The project will exploit multi-scale observations combining high-resolution VLT interferometry dataset and VLT (SPHERE, ERIS) dataset to investigate the physical connection of variable phenomena between the different disk scales. The project foresees working with post-processed simulations of dynamical disks and addresses the problem of sparse dataset through machine learning (ML) techniques. Close collaborations are foreseen with scientists from IPAG in Grenoble, from OCA in Nice, France, and from MPIA in Heidelberg.

Requirements:

- Experience with long-baseline (infrared and/or sub-millimeter) interferometry
- Experience with radiative transfer models
- Experience with programming in Python or comparable language
- Experience with ML/AI methods
- Experience in reduction of astronomical observational data (spectroscopy/imaging)
- Experience with statistical analysis of data
- Good communication skills in oral and written English

Offer:

Please use the contact information or the website
<https://blog.mpifr-bonn.mpg.de/imprs/> for more details.

Dynaverse welcome applications from people with diverse backgrounds, e.g. in terms of age, gender, disability, sexual orientation / identity, and social, ethnic and religious origin. A diverse and inclusive working environment with equal opportunities in which everyone can realize their potential is important to us.

Cluster of Excellence
OUR DYNAMIC UNIVERSE
<https://dynaverse.astro.uni-koeln.de>

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