

The warm chemistry in the inner planet forming disk

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Project Description:

The project aims at studying the warm chemistry in the inner regions of planet forming disks. Astrochemical models have been historically developed primarily for the very cold and dilute interstellar medium. One of the fundamental challenges in disk modelling is to take into account additional chemical processes, which are well-known to occur in the warmer and much denser planet atmospheres, for example reactions from excited electronic states, combustion, hydration of silicate grains and oxidation of carbonaceous grains, and the convergence to thermo-chemical equilibrium at very high pressures. This is especially relevant for linking to the composition of terrestrial planets that could form in these inner regions. The project is also linked to mid-infrared spectra of planet forming disks that will be collected with JWST using the MIRI instrument and it includes analysis of existing VLT/VISIR and CRIRES data.

Innovative Training Network CHAMELEON

This project is part of the Marie Skłodowska-Curie Innovative Training Network (ITN) CHAMELEON: Virtual Laboratories for Exoplanets and planet forming Disks. The ITN combines the expertise of eight European research institutes (Universities of St Andrews, Groningen, Copenhagen, Edinburgh, Leuven and Antwerp, the Max-Planck Institute in Heidelberg and the Netherlands Institute for Space Research) to cover all the relevant aspects of this complex modelling task, including observation and interpretation. All students will obtain double degrees and training secondments are next to the university nodes foreseen at LUCA School of Arts, Copenhagen Game Lab and the Scottish Parliament Information Center). The network consists of 15 Early Stage Researchers (PhD students) and the respective supervisors/local research groups. See also <http://chameleon.wp.st-andrews.ac.uk/recruitment/> for a list of all open PhD positions within the network. This specific PhD position has a foreseen total of one year spent at the University of St Andrews (over the time period of 4 years).

The Host Institute:

The Kapteyn Astronomical Institute is part of the Netherlands Research School for Astronomy (NOVA) and is recognised world-wide for the quality of its research in multiple areas of astronomy. With 15 faculty and 50 PhD students, it is the second-largest astronomical institute in the Netherlands. Groningen, a historic town in the northern Netherlands, occupies a strategic place in Dutch astronomy, hosting both the Kapteyn Institute and the low-energy astrophysics division of the Netherlands Institute for Space Research (SRON). The Kapteyn Institute has a strong connection with the Netherlands Institute for Radio Astronomy (ASTRON) in Dwingeloo, a European centre of radio astronomy research. Staff and PhD students at the Kapteyn Institute frequently collaborate with SRON and ASTRON scientists and engineers. There are also strong interdisciplinary connections with other institutes in the Faculty of Science and Engineering. English is the common language of the Institute.

Requirements:

We seek an excellent student with a strong background in physical sciences and/or astrophysics. A successful candidate must hold a Masters degree or equivalent by the starting date of the position. Previous research experience on planet forming disks, astrochemistry, and/or mid-IR spectroscopy and a track record of team work/mobility will be important criteria for the selection.

Application documents:

We expect candidates to submit a cover letter, a two page statement of research experience (summary of research done), a curriculum vitae, a transcript of grades (all separate pdf files) and two letters of reference to be sent independently to phdkapteyn@astro.rug.nl. Applications received before May 25 will receive full consideration. Informal inquiries are welcome and should be sent to kamp@astro.rug.nl.