

## **Position of a Project Engineer / Postdoctoral Researcher / Doctoral Students**

The Terahertz- and Astro-Photonics Laboratory Group of the Radio Astronomical Instrumentation Group at University of Chile offers an opportunity in the field of design, construction and testing of an

### **Astronomical 2-3 Telescope [Fiber-Based NIR Heterodyne Interferometer](#)**

(click link) at 1.55  $\mu\text{m}$ . Whereas we currently use off-the-shelf components from the fiber-telecommunication industry to first demonstrate the overall-concept in a quasi-lab environment, the experiment is meant in the long term to develop towards longer wavelengths, baselines and bandwidths. There it should once serve as a test bed for developing components and devices for heterodyne operation in the 10-20  $\mu\text{m}$  wavelength range, where the overarching motivation is the internationally proposed "Planet Formation Imager" interferometer. Its scientific goal is to resolve planet-forming sub-structures in young stellar accretion disks for which it needs a large number of larger telescopes at large baselines and mid-infrared wavelengths to finally surpass the spatial resolution of ALMA. Thus its architecture should be similar to ALMA, based on fibers and heterodyne detection. Currently we run a zero-geometrical-delay small-baseline correlation experiment near our lab with two 14"-Dobsonian telescopes and a FPGA-based 1GHz bandwidth correlator (ROACH). This is to be extended to three telescopes and correlators, including delay-tracking, fringe-stopping, and a direct-detection fringe tracker for three baselines. Finally, tests are to be made on real bright stars. Several scientifically interesting lab experiments are resulting along this pathway.

The position is best suited for candidates from the field of Physics or Electrical Engineering with skills in

- experimental optics (lab or observatory experience in fiber- and free-space optics) and/or photonics, microwaves, background in device physics (quantum detectors, lasers)
- instrumental monitoring and control, and FPGA programming (e.g. Matlab, Verilog, Python,...),
- digital and analog electronics (LNA-amplifier, lock-loops/controls),
- vacuum and cryogenics, mechanical design,
- project organization (e.g. systems engineering), communication and motivation (for coordinating sub-projects with the students and to convey knowledge to them),
- collaborative leadership and a proactive speedy but thorough working style,
- physical view of the things, experimental creativity.

Those interested in a doctoral thesis in this field are also encouraged to contact us.

The position is directly available and so far until the end of 2017. During this time the candidate can apply for a Conicyt doctoral or postdoctoral funding, whatever applies.

If you are enthusiastic for developing cutting-edge instrumentation for astronomy, want to contribute that a vision becomes reality, and feel familiar with a good part of the skills, then please send until March 18 your CV and a letter of intention to Dr. Ernest Michael, E-mail: [emichael@ing.uchile.cl](mailto:emichael@ing.uchile.cl), Departamento de Ingeniería Eléctrica (DIE), FCFM, Universidad de Chile, Av. Tupper 2007, Santiago, Chile. Feel free to ask more details under Tel.: +56229784095.