
PhD thesis

Laboratory : Laboratoire d'Astrophysique de Marseille, Centre de Recherches Astrophysiques de Lyon, European Southern Observatory.

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Title: Curved detectors for compact and high performance astronomical spectrographs

Description: The advent of flexible electronics opens a new perspective for the design of astronomical instruments, which could benefit from the multiple advantages offered by the curving of science-grade detectors.

Curved detectors present the ability of directly compensating for the field curvature aberration in optical designs, then offering a new optimization parameter for optical designers. The use of curved focal planes allows reducing the number of elements in an optical train, reduces the complexity of the optics, whilst increasing the field of view and allowing the design of very fast wide field camera modules, which could not be realized with classical flat electronic sensors.

Activities on going at LAM in the frame of the ICARUS project are dedicated to the emergence of curved detectors for astronomical instrumentation. The PhD work will be shared between LAM (Marseille), CRAL (Lyon) and ESO (Munich, Ge), and be placed in the frame of the design of a multiplexed spectrograph concept for giant telescopes.

The selected grad student must have skills in instrumentation and optics, to work on the optical design of the spectrograph modules, the experimental work on the curved detectors characterization and the simulations to estimate the impact on the performance of the proposed instrument compared to the state of the art.

The Grad student will be part of a team of 6 people at LAM including 2 post docs, 2 grad students and the PhD supervisor. This team is part of the R&D group gathering about 30 people. The LAM values equity and inclusion in the fields of astronomy and instrumentation. We commit to equal evaluation of applications coming from under-represented communities, through the criteria defined by the European Commission.