

**Title of the internship: Calibration of LSSTCam, the largest camera in the world**

Supervisor : Emmanuel Gangler  
Laboratory : LPC  
University : Université Clermont Auvergne (France)  
Email : emmanuel.gangler@clermont.in2p3.fr

**Summary :**

*Dark Energy is now a soundly established paradigm to describe the expansion of our Universe. Despite its discovery dating back more than 20 years ago and which was awarded a Nobel Prize, little is known still about its nature. The Rubin Observatory, nearing completion, has been designed to be the next revolution in the field. Equipped with LSSTCam, the largest camera in the world (3 billion pixels), it will scan the whole austral sky for 10 years, amounting to billions of galaxies and tens of thousands Type Ia supernovae observed.*

*With this unprecedented data volume, new cosmological constraints will be derived, provided the instrument can be calibrated to adequate precision. As of today, test data acquired at SLAC (California) are being used to evaluate the performances of the camera. This is part of a staged commissioning where the first on sky data will be acquired in 2023 in Chile, for an actual start of a survey in 2024.*

*The main goal of the M2 internship is to characterize the camera response to incoming photons. The intern will be trained to basic and more advanced CCD imagery techniques for astronomy, a skillset that can be easily applied to any other astronomical instrument. The natural opening of this M2 internship is a PhD centered in the calibration and scientific analysis of the very first data acquired by the Rubin Observatory.*

*The successful candidate should be proficient with numerical and statistical tools, as well as be fluent in Python programming, including the use of numpy and other scientific libraries. A solid background in astrophysics, cosmology, and/or familiarity with modern coding environment would be a plus.*