

## Proposed MSc Project

### SC2RG Survey: investigating blue stellar clumps in a sample of Collisional Ring Galaxies

Supervisor: Zara Randriamanakoto (zara@sao.ac.za)

*Student will be expected to register at UCT*

**Background:** Collisional ring galaxies (CRGs) are peculiar objects that form through the collision between a small galaxy companion and the rotation axis of a larger disk galaxy. The intense starburst episodes happening in these interacting systems trigger the formation of complexes of young massive star clusters (YMCs) also known as blue stellar clumps. With their ages as young as 10 Myr and their masses above  $\sim 10^5 M_{\odot}$ , these compact sources represent the most massive and extreme form of star formation (SF) in nearby galaxies. They are thus useful tools to trace SF history of their host galaxy. This will ultimately help for fine-tuning the general theory of SF in the local Universe.

**Project description:** This research project aims to investigate the influence of the host environment on the star cluster formation and evolution mechanisms by studying YMCs and blue stellar clumps in a representative sample of CRGs (see Fig. 1). High-resolution multiband HST observations will be analysed to derive the photometric and physical properties of the cluster population. This project is unique in a way that there are only a handful of photometric YMC studies hosted by CRGs to date.

**Special requirements:** Basic (python) programming skills and a desire to learn how to use new astronomy software.

*If you are interested, please get in touch via email for further details and to discuss the project.*

Figure 1: HST false color images of a sample of collisional ring galaxies.

