

# Near Infrared Photometry of Southern Pairs and Triplets of Galaxies

Ivânio Puerari<sup>1</sup>, Margarita Valdez-Gutiérrez<sup>2</sup>, Sebastian Gurovich<sup>3</sup>,  
Kenneth F. Freeman<sup>3</sup>, and Héctor Hernández-Toledo<sup>4</sup>

<sup>1</sup>INAOE, Mexico

<sup>2</sup>Instituto de Astronomía, Universidad Nacional Autónoma de México,  
campus Ensenada, B. C., Mexico

<sup>3</sup>Research School of Astronomy and Astrophysics, The Australian National University,  
Australia

<sup>4</sup>Instituto de Astronomía, Universidad Nacional Autónoma de México, Mexico

**Abstract.** We present near infrared photometry of select pairs and triplets of galaxies observed with the CASPIR camera attached to the 2.3m Advanced Technology Telescope at Siding Spring Observatory, Australia. The preliminary results show that galaxies in pairs or triplets present near infrared colors that are redder than normal galaxies. We also performed a morphological analysis using bi-dimensional Fourier Transform techniques, as well as classical bulge+disk fits. Compared to isolated galaxies, the light distribution of galaxies in pairs and triplets often needs a larger number of Fourier coefficients to be well represented. Also, light profiles usually show deviations from the exponential disk (disk distortions, strong bars, etc.). In the future we intend to define some method to quantify the strength of the interactions by using the Fourier coefficients and/or the magnitude of the deviations from the classical Sersic + exponential laws.

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Due to their environmental simplicity (compared to groups and clusters), the pairs and triples of galaxies provide a unique opportunity to perform a photometric study of galaxies and their structural components in a non-equilibrium configuration. In this way they are the natural systems to be studied in order to understand how galaxy interactions change fundamental parameters as the characteristic radial scale lengths of the disk and bulge, measured distortions, colors, etc. (Hernández-Toledo & Puerari 2001). To achieve this goal, our group is carrying on a large program of near infrared observations of pairs and triplets of galaxies, as well as isolated spiral systems. The analysis of the data is yet in a preliminary stage, but first results are showing that galaxies in close pairs or triplets present near infrared colors that are redder than normal galaxies. The 2D Fourier spectra (see, e.g., Puerari and Dottori 1992) show a more complex behavior compared to isolated spirals. In order to be well represented by the Fourier coefficients, the light distribution of galaxies in pairs and triplets usually needs a large number of Fourier coefficients, probably due to distortions caused by the interactions. In the future, we intend to define a method to quantify the strength of the interactions by using the Fourier coefficients. The distortions caused by the interactions also affect the light profiles. By using a classical bulge+disk fits (Sersic + exponential profiles), we also noticed that galaxies in pairs and triplets present large deviations from those classical laws. Further analysis is in progress to quantify the strength of the interactions by using the magnitude of the deviations.

## References

- Hernández-Toledo, H.M., & Puerari, I. 2001, *A&A* 379, 54.  
Puerari, I., & Dottori, H. 1992, *A&AS* 93, 469.