

# Searching for Long-Period Binary Central Stars of Planetary Nebulae with SALT HRS

POSTER ON-LINE

B. Miszalski<sup>1</sup>, R. Manick<sup>2</sup>, J. Mikołajewska<sup>3</sup>, K. Iłkiewicz<sup>3</sup>,  
D. Kamath<sup>4</sup> and Hans Van Winckel<sup>2</sup>

<sup>1</sup>South African Astronomical Observatory, Cape Town, South Africa  
email: [brent@saao.ac.za](mailto:brent@saao.ac.za)

<sup>2</sup>Institute of Astronomy, KULeuven, Leuven, Belgium

<sup>3</sup>Nicolaus Copernicus Astronomical Centre, Warsaw, Poland

<sup>4</sup>Macquarie University, NSW, and AAO, Canberra, Australia

**Abstract.** In the last decade great strides have been made in understanding the role of binary stars in the evolution and shaping of planetary nebulae (PNe). Observational efforts have mainly focused on finding close binaries with orbital periods of 1 day or less. Those close binary systems make up around 1 in 5 PNe, and constitute the youngest accessible window into the aftermath of the critical and unobserved common-envelope (CE) phase of binary-star evolution. The poster focused on our recent work with the High Resolution Spectrograph (HRS) on the Southern African Large Telescope (SALT) to search for long-period binaries in PNe. Considerably less is known about such long-period binaries with orbital periods of weeks to years, but they may be fundamental to improving CE population synthesis models and for determining the total binary fraction of PNe. The queue-mode operation of SALT and the excellent sensitivity and stability of HRS (which is enclosed in a vacuum tank) are ideally suited to detecting binaries with low radial-velocity amplitudes over the expected timescales of weeks to years. Many exciting new discoveries about binaries have already been made in this newly-accessible southern horizon in time-domain astronomy thanks to the many unique advantages of SALT.

**Keywords.** Stars: binaries: spectroscopic, ISM: planetary nebulae

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For the full poster, see <http://dx.doi.org/10.1017/S1743921318002922>