

IPHAS and the symbiotic stars. II. New discoveries and a sample of the most common mimics

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Knowledge of the total population of symbiotic stars in the Galaxy is important for understanding basic aspects of stellar evolution in interacting binaries and the relevance of this class of objects in the formation of supernovae of type Ia.

In a previous paper, we presented the selection criteria needed to search for symbiotic stars in IPHAS, the INT H α survey of the Northern Galactic plane. IPHAS gives us the opportunity to make a systematic, complete search for symbiotic stars in a magnitude-limited volume.

Follow-up spectroscopy at different telescopes worldwide of a sample of sixty two symbiotic star candidates from paper I is presented. Seven out of nineteen S-type candidates observed spectroscopically are confirmed to be genuine symbiotic stars. The spectral type of their red giant components, as well as reddening and distance, were computed by modelling the spectra. Only one new D-type symbiotic system, out of forty-three candidates observed, was found. This was as expected (see discussion in our paper on the selection criteria). The object shows evidence for a high density outflow expanding at a speed larger than 65 km/s.

Most of the other candidates are lightly reddened classical T Tauri stars and more highly reddened young stellar objects that may be either more massive young stars of HAeBe type or classical Be stars. In addition, a few notable objects have been found, such as three new Wolf-Rayet stars and two relatively high-luminosity evolved massive stars.

We also found a helium-rich source, possibly a dense ejecta hiding a WR star, which is surrounded by a large ionized nebula.

These spectroscopic data allow us to refine the selection criteria for symbiotic stars in the IPHAS survey and, more generally, to better understand the behaviour of different H α emitters in the IPHAS and 2MASS colour-colour diagrams.

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Comments:

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