

Winds from Post-AGB binaries

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Post-AGB stars are descendants of low-to-intermediate mass main sequence stars. Binaries among these post-AGB objects display a near-infrared excess, indicating the presence of a circumbinary disc of gas and dust in Keplerian rotation. As the Galactic post-AGB systems are located at typical distances of one to several kiloparsecs, the angular sizes of the circumbinary discs are small, and high spatial resolution techniques are needed to resolve them.

The luminous evolved post-AGB primary has a dim unevolved stellar mass companion. Winds with speeds up to 150 km/s or more, emitted from the companion's circumstellar accretion disc, have been detected for about 35 objects in H α absorption lines. As the companion moves in front of the primary, the geometrical cone of the wind gradually enters the line of sight, absorbing the post-AGB light. This allows to make a full tomography of the wind during the orbital period (of 100 to 2500 days), which is a unique opportunity in astrophysics.

Synthetic spectral-time series of the H α line have been computed using magnetohydrodynamical (MHD) accretion-ejection models. It turns out that many of the observational properties are well reproduced by a cold MHD model. However, systematic mismatches remain such as an overestimated rotation and underestimated post-AGB circumbinary disc lifetime. How to alleviate these issues will be briefly addressed.