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Unravelling post-binary evolutionary channels in Cygnus OB2 using WEAVE

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Abstract

The Cygnus OB2 association forms the core of the Cygnus-X complex, the closest region to Earth with significant massive star formation. Situated less than 2 kpc away, Cygnus OB2 hosts a young population of OB stars (aged between 1.5 and 6 Myr), making it an ideal laboratory for testing evolutionary channels of massive stars.

The newly commissioned WEAVE (WHT Enhanced Area Velocity Explorer) spectrograph at the William Herschel Telescope (WHT) will soon yield hundreds of high-resolution, high-SNR spectra in the Cygnus region through its SCIP survey. This new WEAVE data will enable precise determination of stellar parameters and facilitate a thorough exploration of the statistical characteristics of the massive star population from Cygnus OB2.

In this contribution we present plans to take advantage of WEAVE observations to investigate the existence of multiple evolutionary channels in Cygnus OB2, including binary-induced outcomes (mergers, runaway stars), and the formation of compact objects. A detailed spectroscopic analysis of these populations will help assess whether their observed properties align with predictions from current theoretical models.

My poster in zenodo.org can be found here