

# New massive members of Cygnus OB2

S. R. Berlanas (1,2), A. Herrero (1,2), F. Comerón (3), A. Pasquali (4), C. Bertelli Motta (4), A. Sota (5)

1- Instituto de Astrofísica de Canarias, E-38200 La Laguna, Tenerife, Spain.

2- Departamento de Astrofísica, Universidad de La Laguna, E-38205 La Laguna, Tenerife, Spain.

3- ESO, Karl-Schwarzschild-Strasse 2, 85748 Garching bei München, Germany.

4- Astronomisches Rechen-Institut, Zentrum für Astronomie der Universität Heidelberg, Mönchhofstr 12a, 69120 Heidelberg, Germany.

5- Instituto de Astrofísica de Andalucía-CSIC, 18008 Granada, Spain.

The Cygnus complex is one of the most powerful star forming regions at a close distance from the Sun (~1.4 kpc). Its richest OB association Cygnus OB2 is known to harbor many tens of O-type stars and hundreds of B-type stars, providing a large homogeneous population of OB stars that can be analyzed. Many studies of its massive population have been developed in the last decades, although the total number of OB stars is still incomplete. Our aim is to increase the sample of O and B members of Cygnus OB2 and its surroundings by spectroscopically classifying 61 candidates as possible OB-type members of Cygnus OB2. We have obtained new blue intermediate-resolution spectra suitable for spectral classification of the 61 candidates in Cygnus OB2 and surroundings. We thus performed a spectral classification of the sample using He I-II and metal lines rates, as well as the Marxist Ghost Buster (MGB) software for O-type stars and the IACOB standards catalog for B-type stars. Out of the 61 candidates, we have classified 42 stars as new massive OB-type stars, earlier than B3, in Cygnus OB2 and surroundings, including 11 O-type stars. The other candidates are discarded as they display later spectral types inconsistent with membership in the association. However, the magnitude cutoff and dust extinction introduce an incompleteness. Many O and early B stars at  $B > 16$  mag are still undiscovered in the region. Finally, we have studied the age and extinction distribution of our sample within the region, placing them in the Hertzsprung-Russell Diagram using different stellar models in order to assess age uncertainties. Massive star formation in Cygnus OB2 seems to have proceeded from lower to higher Galactic longitudes, regardless of the details of the models used. The correlation between age and Galactic longitude previously found in the region is now confirmed.

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Email: [srberlan@iac.es](mailto:srberlan@iac.es)