

Masgomas-4: Physical characterization of a double-core obscured cluster with a massive and very young stellar population.

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The discovery of new, obscured massive star clusters has changed our understanding of the Milky Way star-forming activity from a passive to a very active star-forming machine. The search for these obscured clusters is strongly supported by the use of all-sky, near-IR surveys.

The main goal of the MASGOMAS project is to search for and study unknown, young, and massive star clusters in the Milky Way, using near-IR data. Here we try to determine the main physical parameters (distance, size, total mass, and age) of Masgomas-4, a new double-core obscured cluster.

Using near-IR photometry (J, H, and Ks) we selected a total of 21 stars as OB-type star candidates. Multi-object, near-IR follow-up spectroscopy allowed us to carry out the spectral classification of the OB-type candidates.

Of the 21 spectroscopically observed stars, ten are classified as OB-type stars, eight as F- to early G-type dwarf stars, and three as late-type giant stars. Spectroscopically estimated distances indicate that the OB-type stars belong to the same cluster, located at a distance of 1.90 kpc. Our spectrophotometric data confirm a very young and massive stellar population, with a clear concentration of pre-main-sequence massive candidates (Herbig Ae/Be) around one of the cluster cores. The presence of a surrounding HII cloud and the Herbig Ae/Be candidates indicate an upper age limit of 5 Myr.

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Comments:

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