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# Early-type PMS and MS objects in M16 and the Carina star-forming regions

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**Abstract.** Thanks to a variety of pertinent wide-angle facilities (WFI-slitless mode, VLT-FLAMES (Pasquini et al. 2002), SPITZER, 2MASS) it is possible to comprehensively study the nature of early-type objects in star-forming regions like the Eagle Nebula and Carina on large spatial scales. In them, the young open clusters NGC 6611, Trumpler 14, Trumpler 15, Trumpler 16, and their vicinities are of particular interest. With the WFI in its slitless mode (Baade et al. 1999), one can reliably and with little extra effort discriminate in thousands of spectra between intrinsic circumstellar emission as in HBe/Ae stars and diffuse interstellar line emission. The only bias results from the need of the equivalent width and absolute strength of the line emission to be sufficient for detection. VLT-FLAMES spectra combined with infrared data from SPITZER and 2MASS permit the nature of the objects with and without emission-lines to be derived. Following this approach, we report on the discovery and classification of new Herbig Be/Ae stars, pre-main sequence objects, and main sequence stars in these regions. Based on line-width measurements in VLT-FLAMES spectra, the evolution of the rotational velocities between pre-main sequence and main sequence phases is also discussed.

**Keywords.** open clusters and associations: individual (Trumpler 14, Trumpler 15, Trumpler 16, Collinder 232, NGC6611), stars: early-type, stars: pre–main-sequence, stars: emission-line, Be, stars: evolution, ISM: dust, extinction

## 1. Summary of the results

We found 11 emission-line stars in NGC6611-M16 and its vicinity, 9 of them are new Herbig Ae/Be stars. In the open clusters Trumpler 14, 15, 16, Collinder 232 and their vicinity in the Carina nebula; 6 of the 16 emission-line stars seem to be Herbig Ae/Be stars. For the 10 of the remaining emission-line stars, the status is uncertain for 2 of them and 8 of them are actually main sequence stars so are probably classical Be stars.

We also found, in agreement with the theory (Maeder & Meynet 2001), that the rotational velocity decreases by 20% at the ZAMS between the pre Main Sequence and the Main Sequence phases. All the details about NGC6611 are available in Martayan et al. (2008).

## References

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