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Start Clusters as gamma-ray sources

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In the last decade several Young Star Clusters have been associated to diffuse gamma-ray sources both in the GeV and TeV energy ranges. The origin of such emission is still debated, however hadronic processes due to interaction between gas and locally accelerated cosmic rays seems to be favored at least in some cases. The acceleration mechanism is probably related to powerful stellar winds emitted by the most massive stars in the clusters. I will present a model based on acceleration at the termination shock of those winds, showing how the predicted gamma-ray emission agrees with the one observed from the Cygnus OB association. Moreover, using the same model I will present the total contribution to the diffuse Galactic gamma-sky due to clusters which are too dim to be resolved as single sources by present gamma-ray telescopes.

Presenter: MORLINO, Giovanni (INAF-Astronomical Observatory of Arcetri)

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