

Pre-main sequence masses and the age spread in the Orion cluster

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Description: -

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Using theoretical pre-main-sequence tracks, we confirm the earlier finding that star formation has accelerated over the past 10⁷ yr.

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The mean turbulent speed increased to its recent value, which is reflected in the present-day stellar velocity dispersion. Here we present an improved Hertzsprung-Russell H-R diagram of the Trapezium cluster, in which the contamination by optical veiling on spectral types and stellar luminosities has been properly removed.

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The current ONC will be gravitationally unbound once cloud destruction is complete, and is destined to become a dispersing OB association. . Outside of the Trapezium, the distribution of stellar masses is remarkably uniform, and is not accurately described by the field-star initial mass function.

[2011.14483] An Improved HR Diagram for the Orion Trapezium Cluster

The magnetic pre-main sequence evolutionary tracks can better explain the luminosities of the low-mass stars. We find that the extinction law from Cardelli et al.

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We demonstrate this contraction theoretically through a simple energy argument. Have an idea for a project that will add value for arXiv's community? Finally, the acceleration has been spatially uniform throughout the cluster. Sensitive infrared surveys could confirm this hypothesis.

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Thus, there is no correlation between stellar age and mass, contrary to previous claims.

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