
Estimating the Low-End Mass Function of the Arches Cluster Using Intensity Histograms of Unresolved Pixels

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It has been suggested that the nonstandard star formation environment near the Galactic center may lead to an initial mass function skewed toward relatively massive stars and having an elevated mass cutoff. Two Galactic center star clusters, the Arches and Quintuplet, may give an answer to such suggestion, but the most recent high-resolution IR observations for these clusters can only resolve stars with masses down to ~ 5 Msun. Here, we present a new method for estimating the low-end mass function from a background-limited observation of a star cluster—we empirically find the mass function that gives the best match between the pixel intensity histograms of the observed image and the model image constructed for an assumed mass function. This method also employs Fokker-Planck models to reproduce the spatial distribution of stars as a function of mass.