

# The Origin of Stellar Masses

Prof. Mark Krumholz  
UC–Santa Cruz

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Room 118 Nieuwland Science Hall

Refreshments @ 3:30 in 202 NSH

The mass distribution of newborn stars, known as the initial mass function (IMF), has a distinct peak at a mass slightly less than that of the Sun. This characteristic stellar mass appears to be nearly invariant across a huge range of star-forming environments, and over most of cosmic time. Explaining its origin and universality is one of the oldest problems in theoretical astrophysics, and a fully successful theory eludes us even today. In this talk, however, I describe recent progress toward an explanation for the mass scale of stars. This work is based on radiation-hydrodynamic simulations, which elucidate the way forming stars feed back on their environments and regulate the process of turbulent fragmentation that determines the IMF. Using insight from these simulations, I show that it may even be possible to express the characteristic mass of stars in terms of fundamental constants.