Where do rogue planets come from?

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Resumen

Planetary-mass objects freely wandering in molecular clouds were discovered more than 20 years ago, but recently the number of these objects was found to be higher than previously thought. Because of this, their origin is at the heart of current debates, being the "star-like formation" or the "planet formation within a protostellar disk and subsequent ejection" the most promising scenarios. The recent observational efforts to search, identify and characterize planetary-mass objects and low-mass brown dwarfs that are still embedded in their molecular clouds will be presented. Updated correlations of protostellar properties such as mass infall rate or outflow momentum rate with bolometric luminosity down to the planetary boundary will be presented as well, which constitute a classical test to distinguish among scenarios. Finally, evidence of a particular underproduction of planetary-mass objects in Ophiuchus compared to Lupus and Taurus will be shown, and possible explanations for this behavior will be discussed, including heating of the Ophiuchus cloud by the nearby OB stars. Final conclusions will be provided with the information gathered so far, including the possibility that the planetary-mass regime of the initial-mass function is subtly shaped by stellar feedback and dynamical interactions within protostellar disks.