On the origin of stars and their planets: A holistic vi

KEYWORDS: Stars: formation - Accretion disks - Protoplanetary disks - planets and satellites: formatic interactions

SUMMARY: Stars are the building blocks of galaxies and the hosts of planetary systems. To unravel the intr governing the birth of stars and planets, a comprehensive and interconnected approach is essential. Under t stars form as a result of gravitational collapse of interstellar clouds and filaments of gas and dust. characterized by the development of a protostar-disk system, playing a fundamental role regulating the ejection of material, and providing the building blocks of planetary systems. Thanks to the advent o telescopes and ultra-sensitive radio interferometers, as well as developments in radiative transfer models simulations, we are able to decipher with increasing detail the physico-chemical properties and phenom envelopes, disks, and jets) associated with each stage of the star formation process. In addition, we are no protoplanetary disks with exquisite angular resolution, revealing the beginning of the planet formation proc azimuthal asymmetries, central cavities, gaps, bright rings, and spirals, thought to be produced by formi frequently observed. Indeed, infrared and mm point sources, which could be tracing planetary embryos, have inside the cavities and gaps of some disks. All this indicates that planetary formation is consubstantial with th process, suggesting a large abundance of planets comparable to the number of stars in the Universe. H essentially all exoplanets have been found around mature stars, while solid detections of forming planets ir disks remain very scarce. This abrupt observational gap between protoplanetary disks, on the one hand, and exoplanets, on the other, is a handicap in our understanding of the planetary formation process and the subs of planetary systems. Thus, a fundamental task to fill this gap is to increase the number of detections of ex increasingly younger stars, with particular focus on detecting forming planets in protoplanetary disks.
The aim of this symposium is to bring together experts on the star and planet formation fields to discuss the recently on the theoretical and observational fronts. This symposium will also serve to promote collaboration between different communities aiming to understand the origin of planets, in line with the recently approve “PLANETS” "The birth of solar systems", an EU-funded, interdisciplinary research network.
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