

Sonderseminar

von

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über

“On magnetic fields and what we can learn from polarimetry in protoplanetary disks”

Young stars are surrounded by disks of dust and gas. These circumstellar disks are the birthplaces of planets. Understanding the physical processes in these disk is vital for the understanding of planet formation. It has been predicted that magnetic fields are an important factor on a wide range of physical processes in protoplanetary disks, such as the migration of planet (esimals) and the mere evolution of disks. Yet, observational constraints are still pending. In the classical picture, (sub-) mm continuum polarisation is the tracer for magnetic fields in disks. Aspherical dust grains, whose thermal emission is intrinsically polarized, get aligned by the magnetic field due to radiative torques. In recent years, however, this picture has been challenged. New theoretical studies show that (sub-) mm continuum polarisation can also be created by scattering of the thermal dust emission or arise from aspherical grains which are aligned by the radiation field rather than the magnetic field. These three mechanisms trace fundamentally different physics in protoplanetary disks, yet, their polarisation predictions are not clearly distinguishable. In this talk, I will highlight the role of magnetic fields in protoplanetary disks, present first achievements on (indirect) observational constraints, and give an outlook on how to disentangle the sources of continuum polarimetry with ALMA.

Montag, 18. September 2017 um 11:00 im SE1

des Institutes für Astrophysik, Türkenschanzstraße 17, 1180 Wien