institut für astrophysik
UNIVERSITÄTSSTERNWARTE WIEN

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Leiter des Instituts

Seminar

von

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Realistic dust properties for dust growth in dense cores

Grain growth is expected from far infrared observations but the emission process implies a degeneracy between dust properties and temperatures. On the contrary, the scattering phenomenon does not depend on temperature but relies on dust geometry (size and shape). Nowadays, no dust grain model is able to reproduce consistently the multi-wavelength observations of dense cores including both scattering and emission. Recent laboratory works show the impact of dust composition on emissivities. Dust grain models from the literature suffer from a lack of flexibility: either the dust composition is fixed and too constraining for dense cores (with a magnesium over iron ratio too low) or the dust size distribution is set for given density, porosity, and coagulation time, that likely differ from one core to the other. Based on methods used to derive aggregate properties for protoplanetary disks, I calculate dust properties for dense cores that take into account dust composition, size distribution and shape. I will present a fast method used to derive realistic dust properties for dense cores in a short computation time. In particular, I will illustrate the impact of porosity on scattering efficiency and dust emissivity. I will also review the consequences on dust amount, and show that grain growth requests cold dust in starless cores. Finally, I will discuss the coagulation time needed to build large dust aggregates.

Montag, 09. April 2018, um 15:00 Uhr im HS

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