

Colloquium

SFB 956

Conditions and Impact of Star Formation

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Monday 4:00 pm

Physikalische Institute Köln

Lecture Hall III

Zülpicher Straße 77 | 50937 Köln

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The Multiple Personalities of Cosmic Dust

Eighty years ago, dust was first identified in interstellar space as the something which can absorb the light coming from the stars. These small dust particles were originally thought to be only passive and annoying entities obscuring astrophysical objects that astronomers wanted to observe. However, it appears that dust is a powerful interstellar catalyst that is responsible for the presence of the simplest molecule, H_2 , as well as the most complex molecules in our Universe, like amino acids. In the environments where stars are forming, the catalytic activity of dust can dramatically alter the gas phase chemical composition and thermodynamics. In the inner regions of interstellar clouds, dust retains the chemical species captured from the gas phase to grow icy mantles. Dust becomes a reservoir of interstellar gas. These ices are hosts to a rich chemistry, driven by UV photons and cosmic rays, which can generate complex molecules essential for the formation stars, planets and even life itself. I will discuss how the different roles of dust (catalyst or reservoir) impact the chemical composition of star forming regions as well as the characteristics of the formed stars (mass, binaries).

