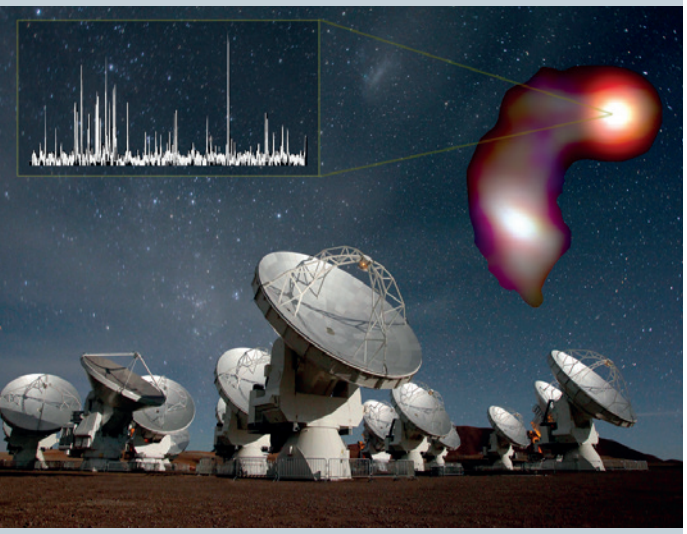
Colloquium

SFB 956

Conditions and Impact of Star Formation

31.10.2016
Monday 3:00 pm

Physikalische Institute Köln
Lecture Hall III
Zülpicher Straße 77 | 50937 Köln



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Exploring the Complex Chemistry of Embedded Protostars

Low-mass stars like our Sun are formed in the centers of dark clouds of dust and gas that obscure their visible light. Deep observations at infrared and submillimeter wavelengths are uniquely suited to probe the inner regions of these young stellar objects and unravel their structures, as well as the physical and chemical processes involved. These earliest stages are particularly interesting as it is in these stages that the first seeds for the chemical evolution of the protoplanetary disk are planted and where some complex organic, possibly prebiotic, molecules are formed.

For this topic ALMA is providing important observational constraints with its high sensitivity for faint lines, high spectral resolution which limits line confusion, and high angular resolution making it possible to study the physical and chemical evolution of material as it is falls in from large scales in molecular clouds to circumstellar disks. In this talk I will discuss the constraints on the chemical structure of deeply embedded protostars offered by recent ALMA observations. I will discuss how we can use systematic surveys with ALMA to shed new light on the formation of complex organics and investigate the link between the physical and chemical structure of deeply embedded protostars on solar-system scales.