

Conference: 5th meeting on Cosmic Dust

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Title: Interstellar chemistry and optical properties of dust grains

Abstract:

Properties of interstellar extinction curves have been investigated using the method of two-color diagrams applied to statistically meaningful samples of early type stars. The survey was based on the extensive datasets: ANS (Astronomical Netherlands Satellite), 2MASS (Two Micron All Sky Survey) as well as the UBV photometry. Our results demonstrate that in a vast majority of cases the extinction curves are very close to the mean galactic extinction curve. This conclusion concerns also directions toward lightly reddened stars which cannot be investigated using the pair method. Apparently dust particles in almost all translucent interstellar clouds, regardless their total extinction, are of similar sizes, structure and shapes. About 20% of the objects reveal the extinction law evidently discrepant from the average one; such extinction may originate in relatively optically thick clouds. We suggest that these discrepancies are related to relative abundances of simple, polar, interstellar molecules which likely populate relatively thick clouds. The discrepant extinction curves seem to be related to the high abundance ratio of CN/CH; perhaps surfaces of certain grains play an important role in forming simple molecules, especially CN.