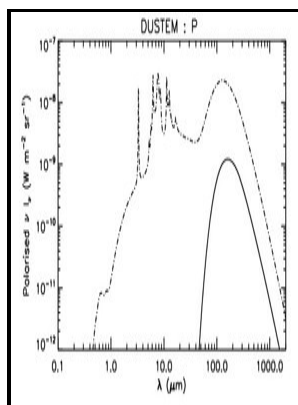


# New constraints on the composition of interstellar grains from observations of extinction and polarization

University of Texas at Austin - A Dynamical Constraint on Interstellar Dust Models from Radiative Torque Disruption



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## A Dynamical Constraint on Interstellar Dust Models from Radiative Torque Disruption

Are Silicate and Carbonaceous Grains Really Separate? ADT is a natural choice for the latter: it can handle non-spherical grain geometries, is accurate for large grains, and is more computationally efficient than Mie theory or Rayleigh—Gans. A special attention is devoted to the analysis of the grain size distributions, alignment mechanisms and magnetic field structure in interstellar clouds. Figures and show how X-ray scattering halos are sensitive to the geometric structure of the grains.

### Composite interstellar grains

In , we give the validity criteria for the DDA and the composite grain models. The polarization at each dipole site is therefore coupled to all other dipoles in the grain. An extensive study of a large number of irregular shapes by Herranen et al.

### Interstellar extinction and polarization

Download figure: Another key advantage of GGADT over naive padding methods lies in memory requirements.

### [PDF] Interstellar extinction and interstellar polarization: old and new models

However, for plausible dust evolution scenarios, dust grains are likely more complicated than single-material spheroids or even ellipsoids. Compare this to the unpadded grid, where , where  $a$  is the characteristic radius of the grain. In the present study, we use more realistic composite spheroidal grain models and we calculate the extinction efficiencies in the extended wavelength region, 3.

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