

Dust production in young debris disks: the case of HR 4796

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Debris disks are the footprint of star and planet formation processes. Pluto-sized planetesimals are continuously being ground down in a collisional cascade, thus continuously releasing small dust grains. Even though our understanding has greatly improved over the past decades, especially thanks to high angular resolution imaging, from an observational point of view we currently know very little about how the production rate and mechanism of these small dust grains.

We recently obtained deep, high angular resolution images of the young debris disk around HR 4796 at optical wavelengths (VLT/SPHERE, ZIMPOL instrument). We modeled the spatial distribution of the small dust grains that we detect. These dust grains are strongly affected by the radiation pressure from the star, but we can model the effect that radiation pressure has on the radial distribution of these dust grains. We can therefore indirectly infer the distribution of the underlying population of parent planetesimals. I will present in this talk the modeling approach and what we can learn when applying it to high-end observations with exquisite angular resolution.