

Giant planets or exo-plutos?

Bayesian constraints from debris disk SEDs and numerical modeling.

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Debris disks are collisionally excited dust disks around 10 Myr or older stars, which have lost their original gas. Using photometry from more than 350 debris disk systems and imaging data, we find a simple description of a planetesimal disk population which is mostly consistent with the data. We show that this population of A, F and G star systems when evolved from a few million to 5-10 Gyrs using a numerical model of fragmenting and coagulating planetesimals (code from Kobayashi and Lohne 2014) to match our data, point to very narrow planetesimal disks. But our Bayesian technique also shows what fraction of disks are required to be wider. We discuss in this work, the main physical reasons for these findings and how the systems vary across spectral types. Finally, we address the question: what fraction of systems are likely to form giant planets, and what fraction are probably in steady state evolution and do not produce giants?