

Dust Around the Nearest Young Stars: The Disk Around the Young M Dwarf GL 803 (AU Mic)

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We present JCMT/SCUBA observations of the thermal emission and scattered light from dust around the nearest (< 30 pc) young stars. Our sample is chosen based solely on stellar age, in a range (10–100 Myr) highly relevant to disk and planet formation. Overall, JCMT/SCUBA observations indicate a precipitous ($\sim 1000\times$) drop in dust mass over the first ~ 10 Myr, and then a steady decline with age for submm detected disks. We highlight the newly found large edge-on disk around the young M dwarf GL 803 (AU Mic). At a distance of only 10 pc, this is the nearest disk seen in scattered light. IR and submm data indicate the system is gas-poor and possesses a large inner disk hole. These suggest that planets at large separations can form around M dwarfs within ~ 12 Myr. By virtue of its proximity and youth, GL 803 is a key system for studies of disk evolution. In addition, this M dwarf system provides a point of comparison with the well-studied A-star debris systems. We present new Keck adaptive optics (AO) multi-wavelength imaging of GL 803. This dataset reveals the innermost 10–50 AU region of the disk, which was not accessible in our original seeing-limited discovery images, and offers among the closest views of dust around another star. Our Keck data also provide strong constraints on the thermal emission from any massive planetary companions in the inner region.

