Disk lifetime of protoplanetary disks surrounding intermediate-mass stars in the inner Galaxy

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Disk lifetime is one of the most important parameters which can control planet formation. The disk lifetime has been estimated by various studies to be \textasciitilde 5--10 Myr. However, this value is applicable only to studies for the solar metallicity. For a thorough understanding of planet formation, the disk lifetime should be determined in other (metallicity) environments. This may impose a strong constraint on the disk evolution mechanisms and the planet formation processes.

We previously derived disk fraction in the outer Galaxy (\textasciitilde 15 kpc from the center of the Galaxy), which is known to be the low-metallicity environments (\textasciitilde 1/10 solar metallicity), and found that disk lifetime is much shorter (\textasciitilde 1 Myr) than that of the solar metallicity. For the next step, we derived the disk fraction of intermediate-mass stars in the inner Galaxy (\textasciitilde 4 kpc from the center of the Galaxy), which is a high-metallicity environment (\textasciitilde 3x solar metallicity), and found a relatively high disk fraction for a cluster with the age of \textasciitilde 20 Myr. This cluster is older than the disk lifetime in solar metallicity clusters, and this suggests that the disk lifetime is much longer in higher metallicity environments. In this talk, I am going to discuss metallicity dependence of disk lifetime in a wide metallicity range from 0.1 to 3 times solar metallicity

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