

On the Relationship Between Stellar Rotation and Radius in Young Clusters
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We have compiled data on rotational velocities for more than 1000 K & M stars in 12 young clusters ranging in age from Orion to the Hyades. These data enable a search for systematic changes in stellar rotational velocity vs. age. Taken together, these data show that most PMS stars spanning ages ~ 0.1 – 10 Myr do not appear to spin up in response to contraction down their convective tracks, and further suggest that any spin up between 10 Myr and the ZAMS is modest ($<2\times$) at best.

These results extend and reinforce our earlier study (Rebull et al. 2002), based on observations of several hundred stars in the Orion Flanking Fields, NGC 2264, and the Orion Nebula Cluster (ONC), which showed that the majority of PMS stars in these three groups apparently do not conserve stellar angular momentum as they contract, but instead evolve at nearly constant angular velocity. This result applies both to stars with and without near-IR I-K excesses indicative of disks.

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