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The mass dependence of chromospheric activity evolution

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We know chromospheric emission decays over time, and yet this empirical relation is still fundamentally an interpolation over 3.5 Gyr from the Hyades to the Sun despite 45 years of progress. Furthermore, its very existence was called into question by Pace et al. (2004, 2009, 2013), who argued that activity plummets and flatlines at 1 Gyr. I will present new HK data for NGC 752 (1.5 Gyr) and Ruprecht 147 (3 Gyr), and ISM-corrected data for M67 (4 Gyr, Curtis 2017), and pair this with the Sun's re-calibrated history (Egeland et al. 2017) and data on field stars from the Keck exoplanet program. I find a mass dependence that supports the van Saders et al. (2016) scenario of weakened magnetic braking to explain the rapid rotation at old ages seen in the Kepler asteroseismology sample. HK emission does rapidly plummet for F stars as proposed by Pace, but continuously declines for G and K dwarfs to approximately 4 and 6 Gyr, respectively, similar to the van Saders magnetic braking timescales.

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