

The TIME Table: Rotation and Ages of Cool Exoplanet Host Stars

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Abstract

The discovery of thousands of exoplanets has motivated – indeed demanded – better knowledge of their host stars. Stellar age is among the properties that is among the most fundamental, but also most difficult to ascertain. M dwarf stars, the most prolific planet hosts and prime targets of searches for Earth-like and potentially habitable planets, are intractable to most methods of stellar age estimation. The most promising technique to assign ages to main sequence M dwarfs is gyrochronology, which is based on the tendency of stars to spin up as they contract to the main sequence and spin down as angular momentum is lost through magnetized winds. Application of this method requires rotation sequences at a known age for calibration, and until recently, calibrators for M dwarfs were essentially unavailable. I will describe recent advances using space- and ground-based telescopes and the application of gyrochronology to estimate the ages of hundreds of M dwarf planet hosts in a recently published catalog.