Age-Rotation-Activity Relation for Kepler Field Stars: Thea Kozakis[1], James Lloyd[1], Jose Manuel Olmedo Aguilar[2], Miguel Chavez[2], Kevin Covey[3], Eric Mamajek[4], Evegenya L. Shkolnik[5]

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Introduction: A better understanding of stellar activity and age is important when characterizing potentially habitable exoplanets, since the UV activity influences the surface habitability and detectability of biosignatures in the atmosphere [1,2]. Over the past several decades, it has been shown that there is a strong connection between stellar rotation, activity, and age, which has come to be known as the age-rotation-activity relationship. A comprehensive understanding of this relationship will enable more accurate stellar age determination as well as improve our knowledge of magnetic field generation. Here we present the results of an analysis of 19,616 Kepler field stars with known rotation periods and near-UV fluxes, 15,471 with characterized differential rotation. All rotation periods were calculated in [3], and all near-UV fluxes were obtained by the GALEX space telescope. Previous studies of the age-rotation-activity have been conducted with at most hundreds of targets, and exclusively in young stellar clusters.

References:
[1] Rugheimer S. et al (2015a) submitted. [2] Rugheimer S. et al (2015b), submitted. [3] Reinhold T. et al (2014) *A&A*, 560, A4