



# Exploring the Early Lives of Planets and their Host Stars Through Simultaneous NUV and Optical Lightcurves With the EVE Space Telescope

Meredith MacGregor (JHU), PI

Ann Marie Cody (SETI), DPI

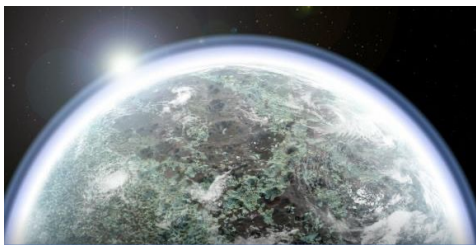
Neal Turner (JPL), PS

Jenn Burt (JPL), exoplanets lead

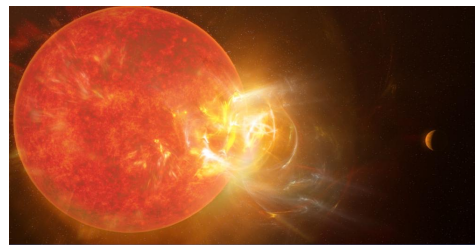
Ward Howard (U Colorado), flares lead

Laura Venuti (SETI), accretion and rotation lead

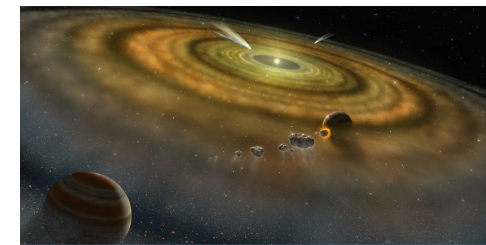
+ 15 science team members in the US, Europe, & Australia



First transit survey focused on discovering young, small planets and constraining their early atmospheric composition and evolution



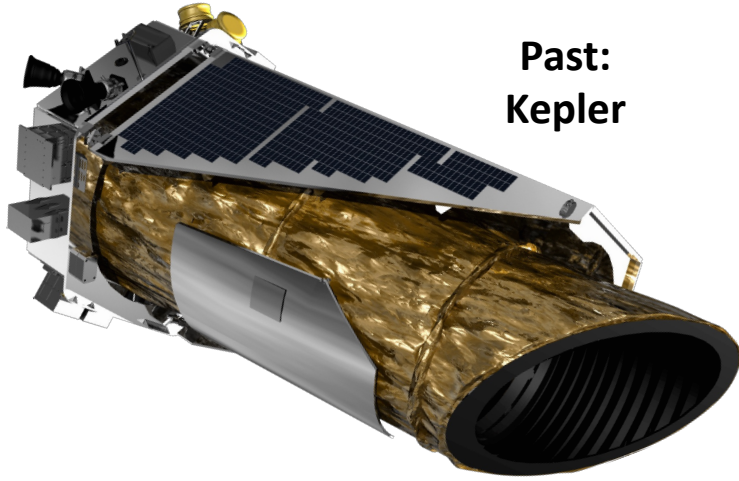
First large survey of optical & NUV flares to measure the photochemically-active stellar flux received by young planets



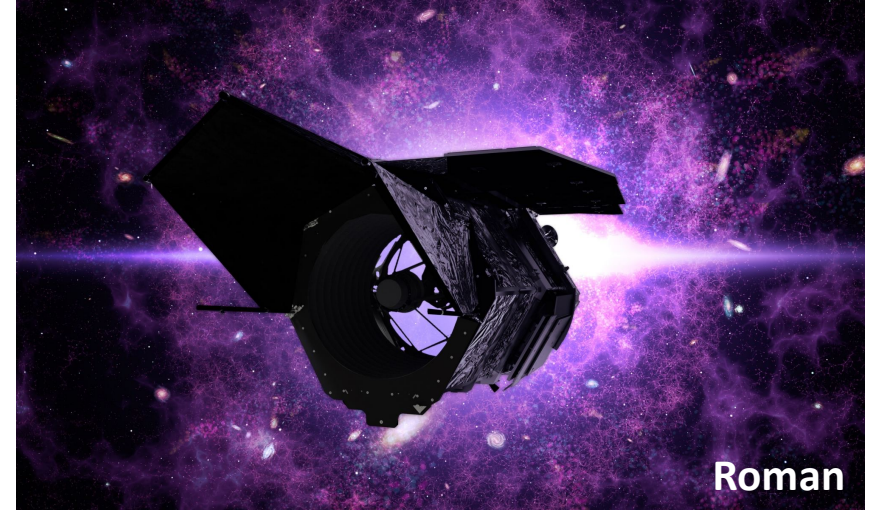
Broadest UV-optical survey of young stars and their disks to determine how accretion sets flaring histories and planetary system architectures

# Planet-Hunting Space Telescopes

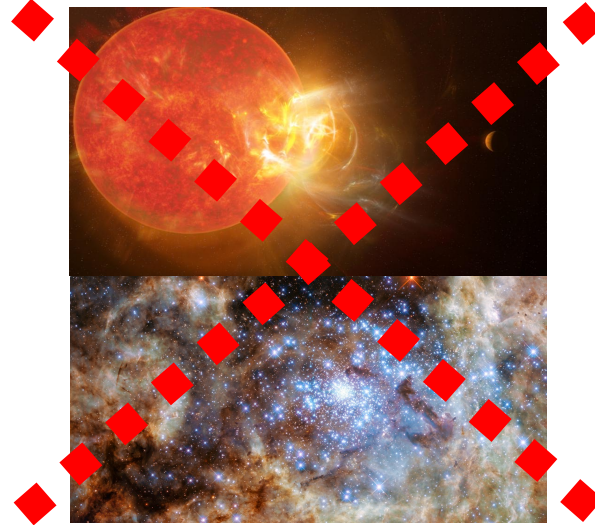
Past:  
Kepler



Future

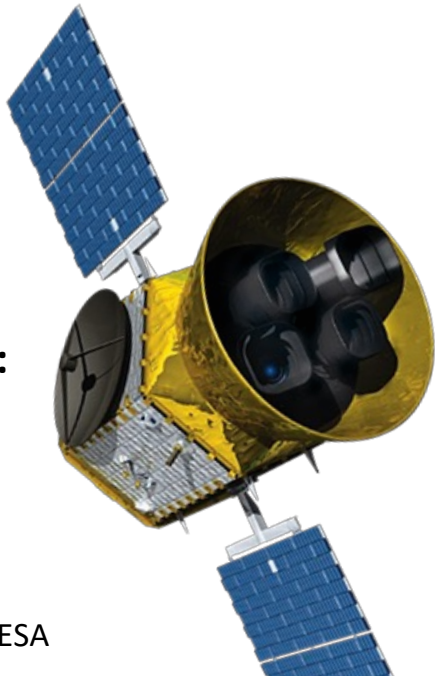


Planets of active stars



Clustered young stars

Present:  
TESS



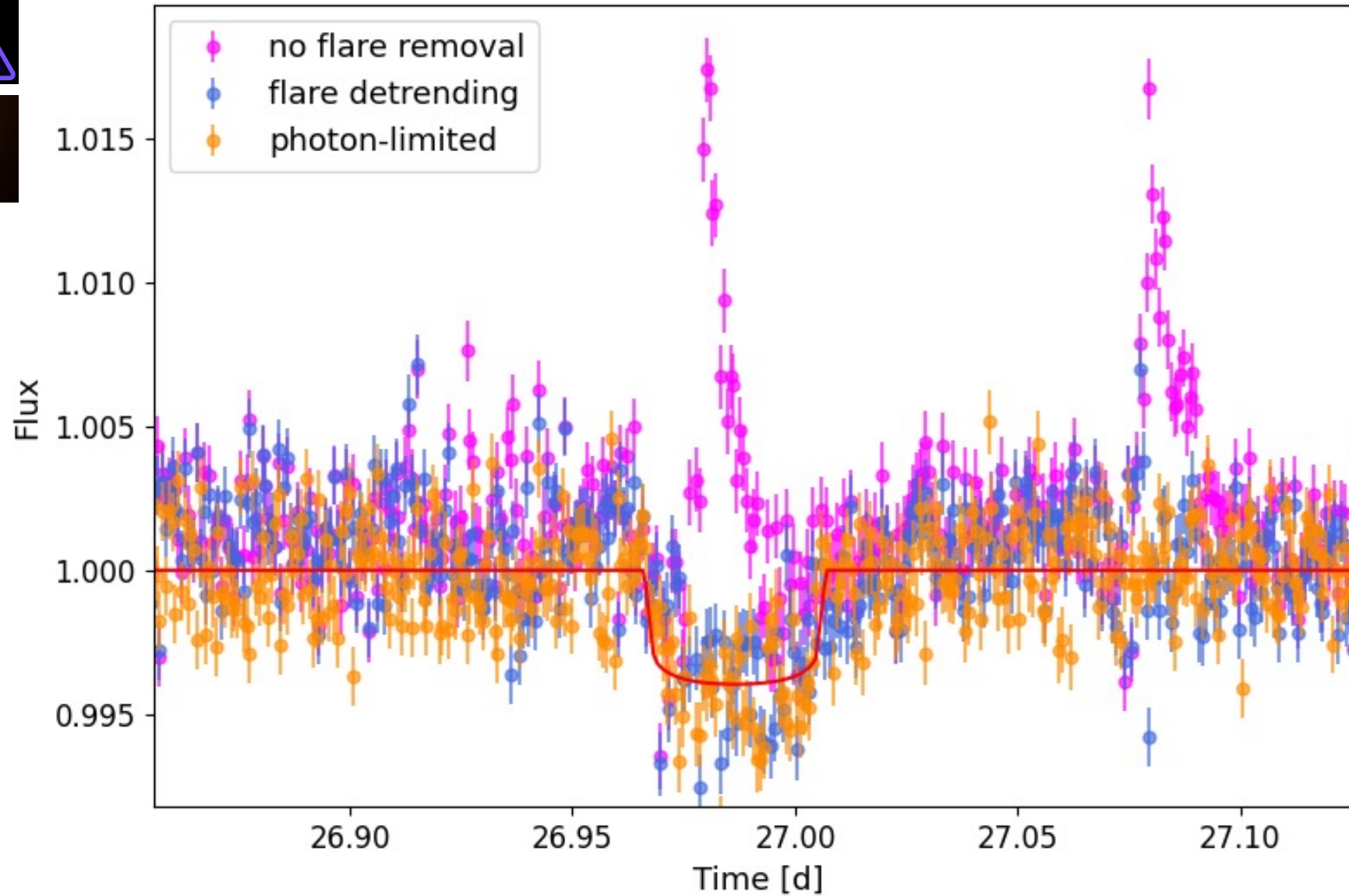


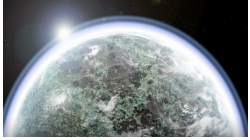


Tobias Stierli / NCCR PlanetS

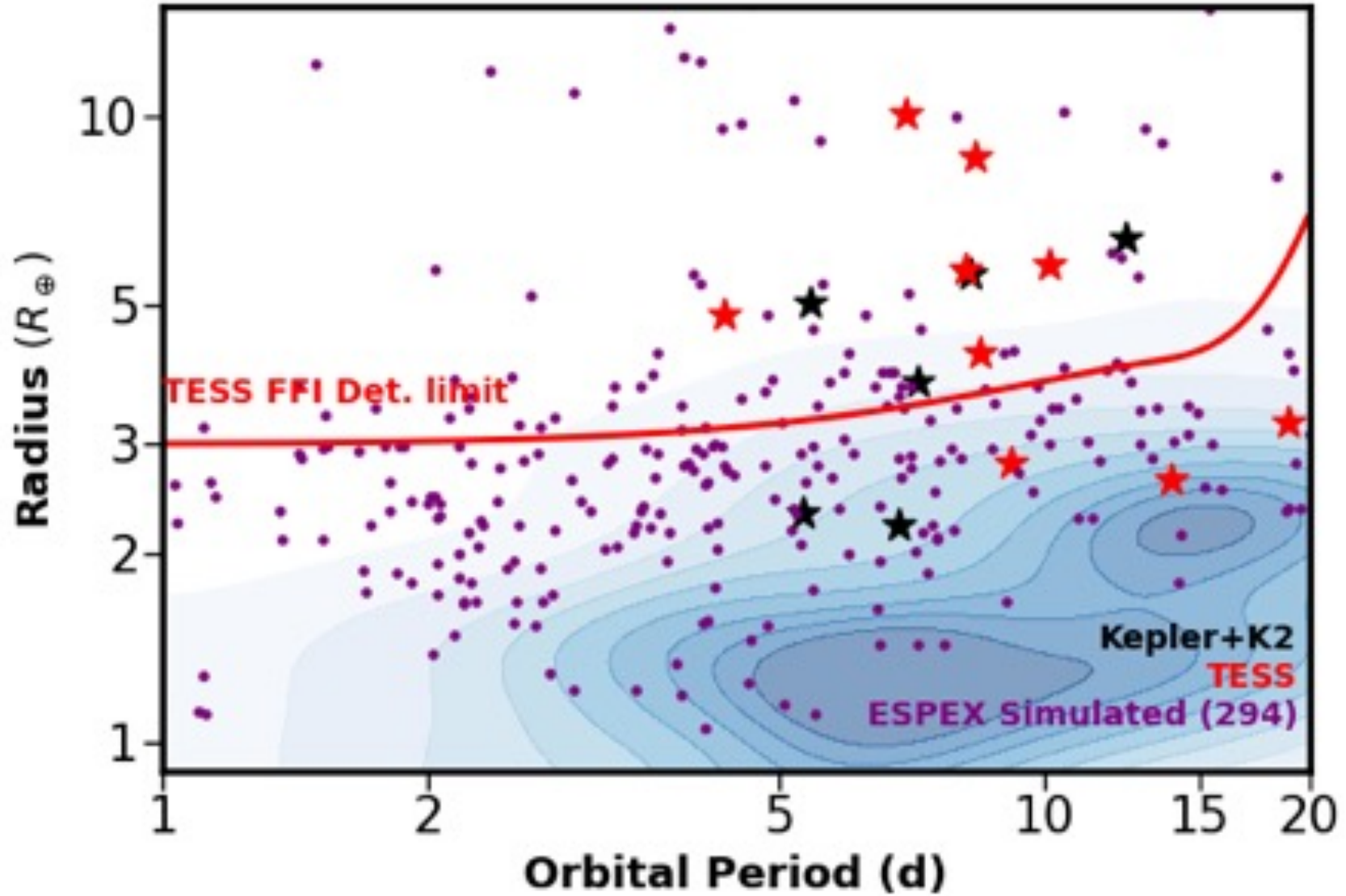


## Modeled EVE detection of transiting exoplanet despite host star's flares

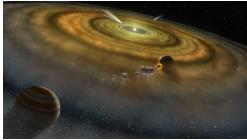




## Modeled EVE exoplanet yield compared with Kepler and TESS

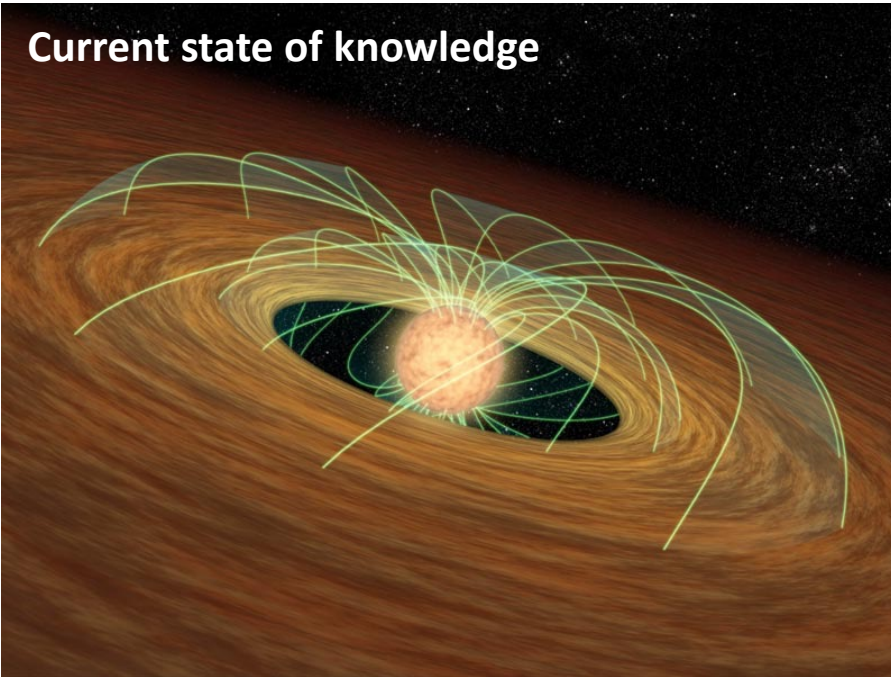






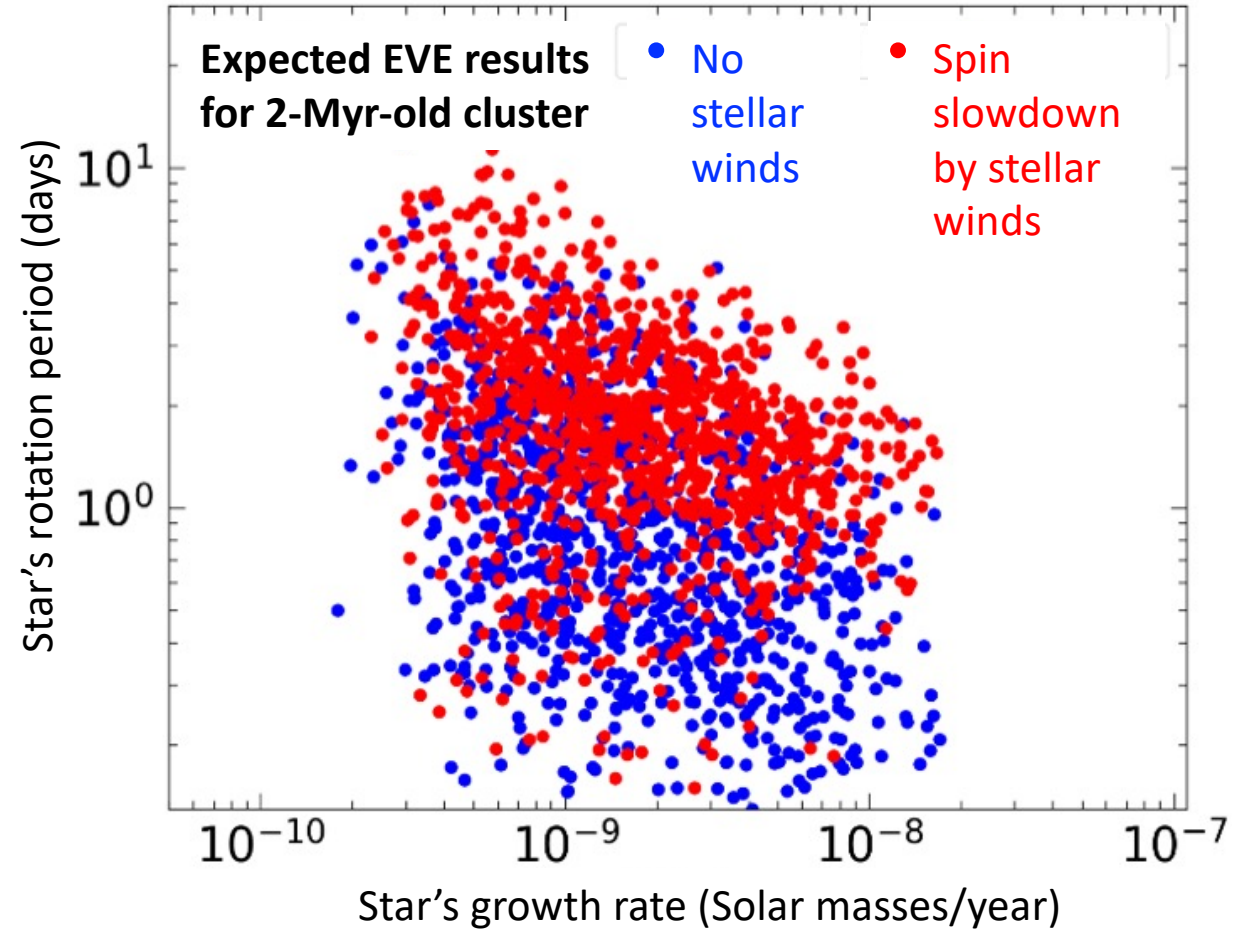
## EVE determines whether young stars' spins are slowed by angular momentum removal in stellar winds

### Current state of knowledge

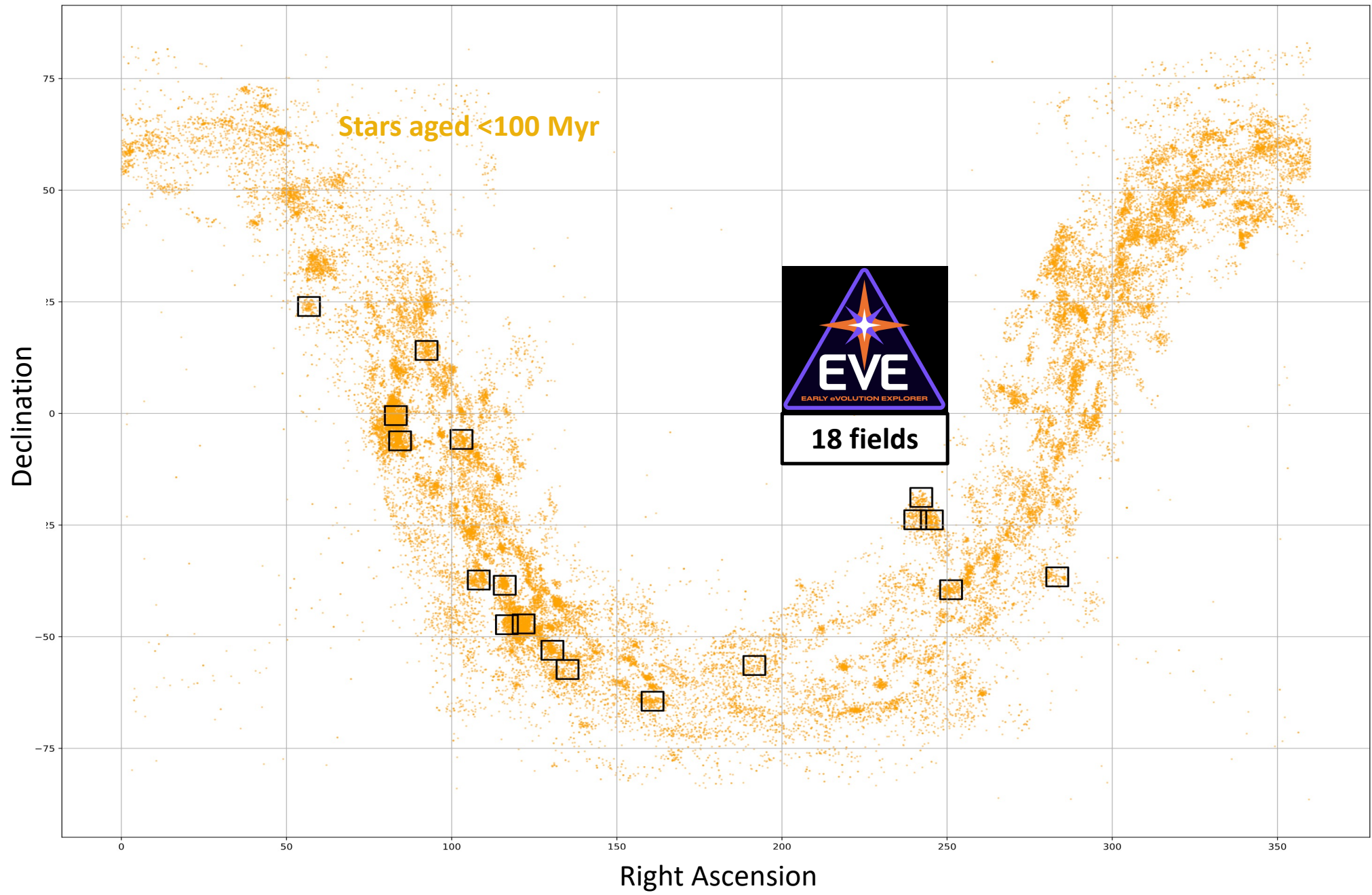


JPL/Caltech

- Star's magnetic fields truncate disk's inner edge.
- Disk torques star up or down via the magnetic fields.
- Disk gas falling onto star along field lines **glows in NUV**.



L. Gehrig





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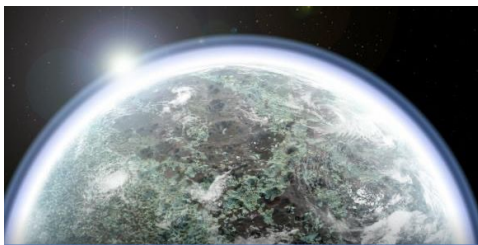
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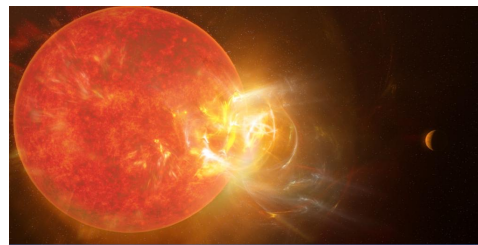
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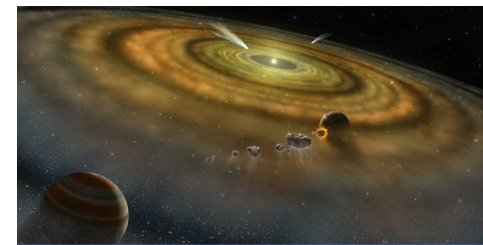
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