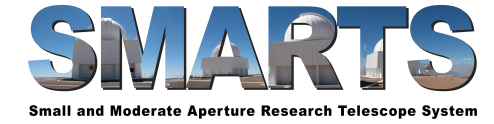


# Orbital Architectures of M Dwarf Systems

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M dwarfs host companions spanning a factor of 100,000 in mass (planets → 0.6 M<sub>⊙</sub> stars) orbiting on sub-AU to 1,000-AU scales.

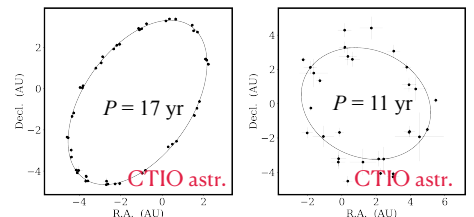
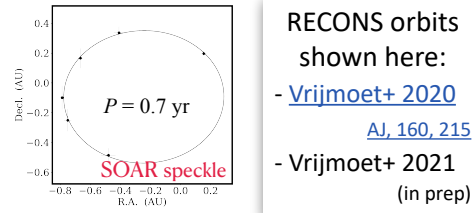
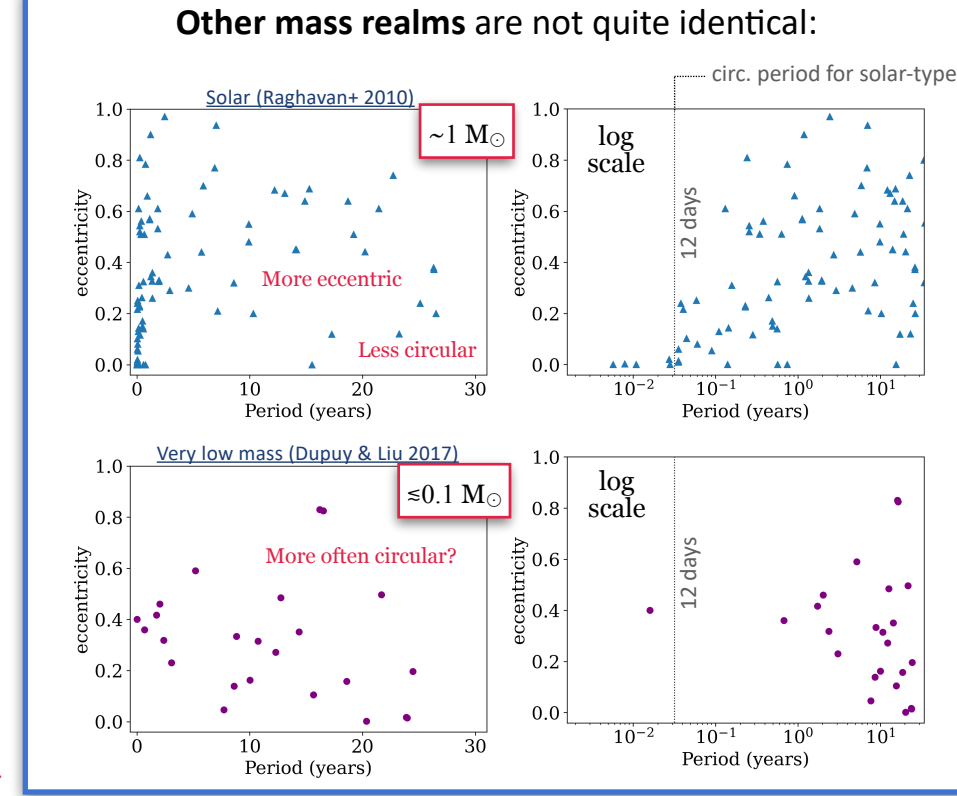
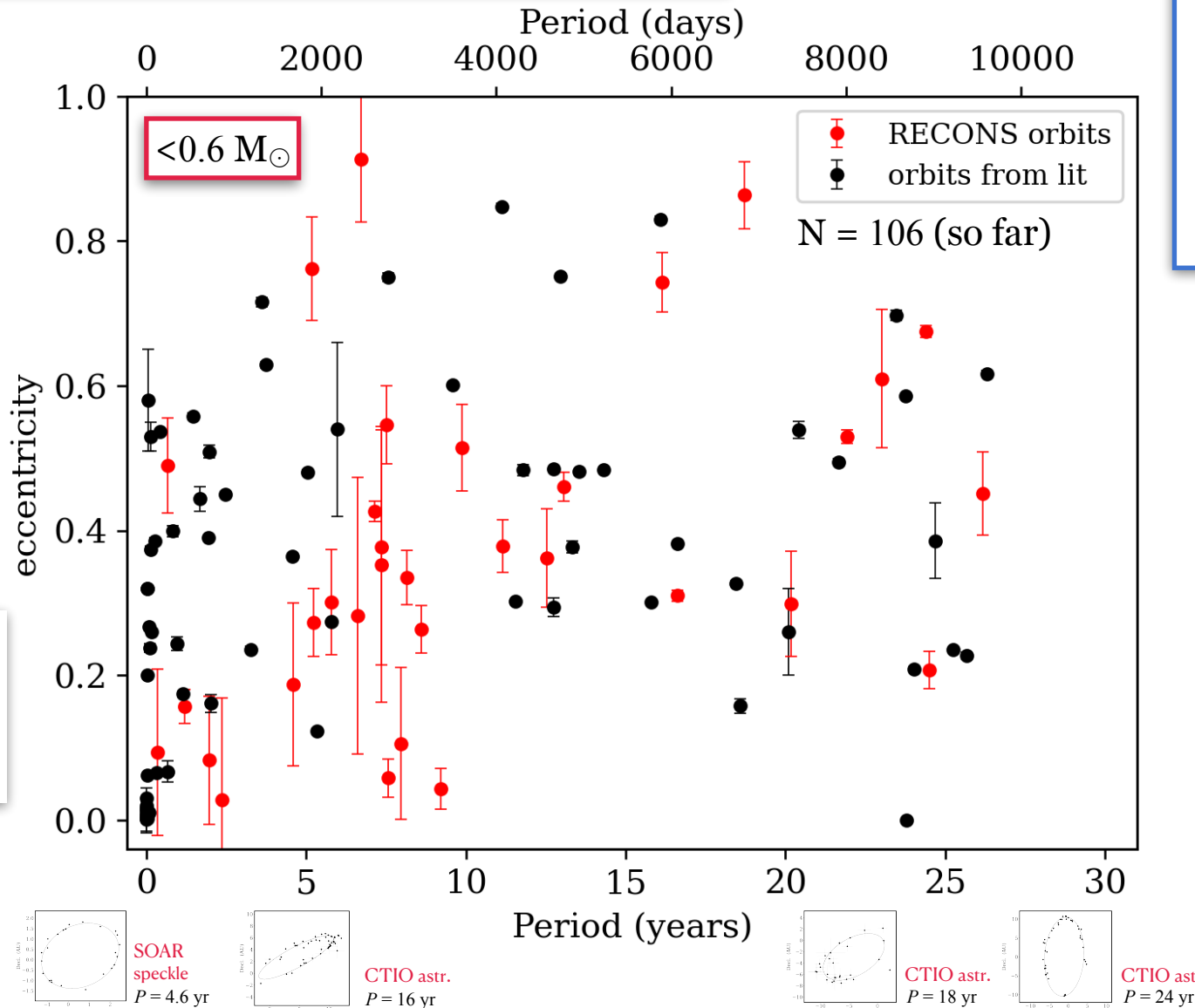
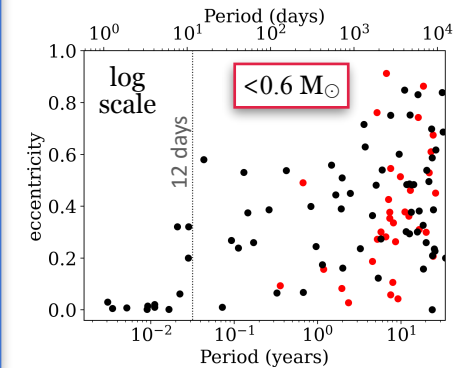
*So how do you know where a companion may be lurking?*  
We are **mapping** ~120 orbiting companions within 25 pc to establish the distributions of their **orbital elements**, seeking clues to their formation and orbital evolution.

Orbits come from:

- **Astrometry** at CTIO 0.9m (22+ yr)
- **Speckle** interferometry at SOAR 4.1m (2+ yr)
- **RVs & imaging** (literature)

Bonus: we will determine **dynamical masses** for the M dwarfs overlapping both the astrometry and speckle lists.

**What we're seeing:**  
*P vs. e* describes the shapes of orbits at a given size, using observables accessible to any method.  
Smaller *e* requires dissipative processes in the early disk, so do systems with 5-year periods have different histories than those with 15-year periods?



RECONS orbits shown here:  
- [Vrijmoet+ 2020](#) [AJ, 160, 215](#)  
- [Vrijmoet+ 2021](#) (in prep)