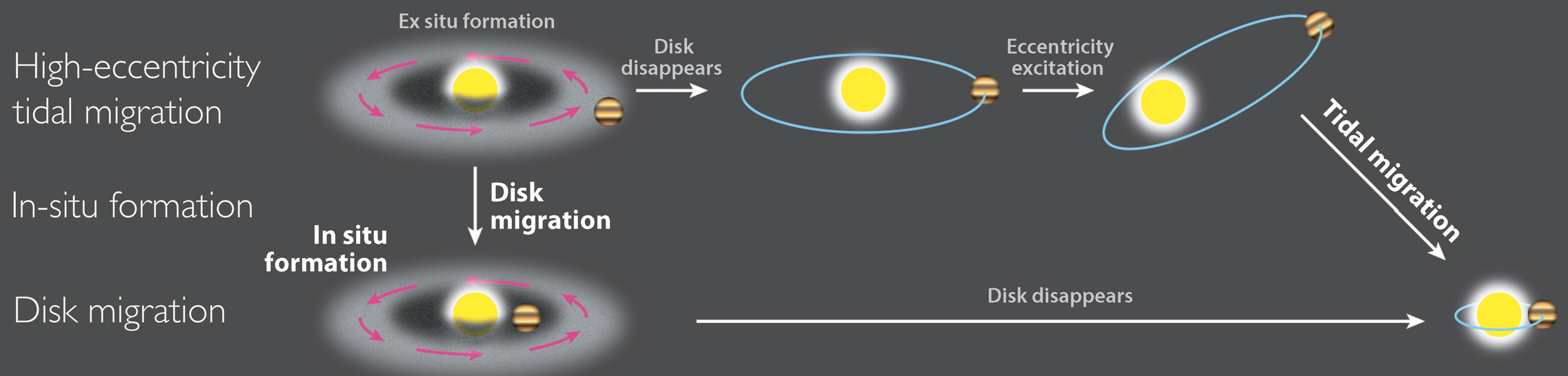
Detection and characterization of *TESS* warm Jupiters to shed light on the nature of their origins channels.



Detection and Characterization of *TESS* Warm Jupiters

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INTRO

- Warm Jupiters (WJs) - giant planet with 10-100 day orbital periods
- Different origins channels argued
  - High-eccentricity tidal migration
  - In-situ formation
  - Disk migration
- A large sample of WJs required to test these origins channels
- Fortunately, TESS has the capacity to discover 1000+ WJs in FFI with 100+ in CVZ!

APPROACH

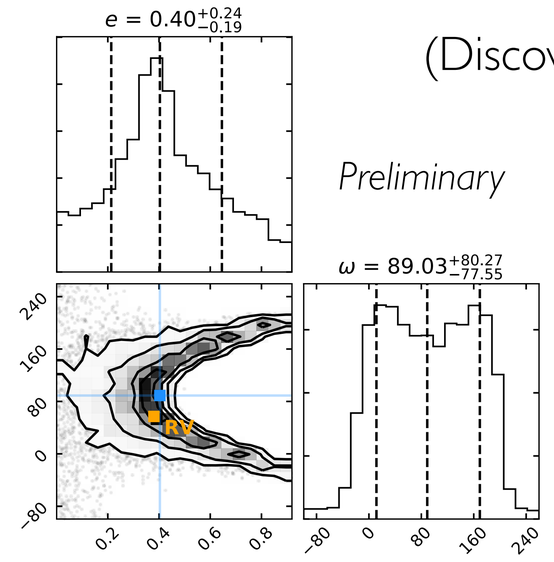
1. Discover and catalog WJs in FFI
2. Fit light curves and determine ephemerides
   - The "photoeccentric" effect constrains WJs' eccentricities
   - TTVs and TDVs indicate WJs with companions
3. Prioritized lists of WJs for short cadence and ground-based follow-up

PRELIMINARY RESULTS

- TOI-172b *consistent with high-ecc migration*
- TOI-216b, c *consistent with disk migration*

TWO EXAMPLE SYSTEMS

- **TOI-172b** *An eccentric warm Jupiter*



(Discovered by Rodriguez+19)

Preliminary

The "photoeccentric" effect

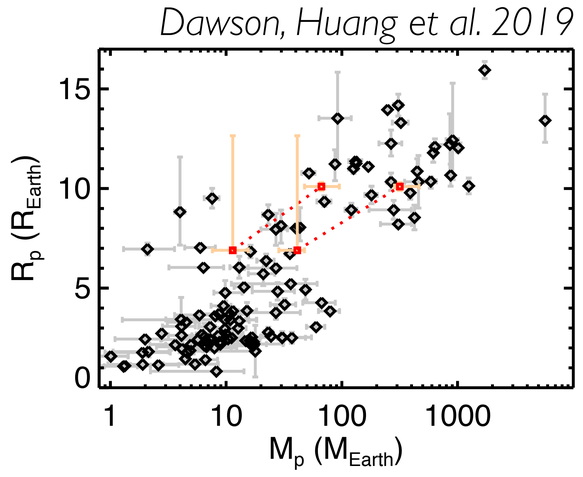
- The WJ candidate eccentricity is effectively constrained
- Consistent with high-eccentricity tidal migration

- **TOI-216b, c** *Two WJs in or just wide of the 2:1 MMR*

TTVs

- Warm planets with TOI-216b and TOI-216c (in red)
- Consistent with disk migration
- See also *Kipping et al. 2019, MNRAS, 486, 4980*

Dawson, Huang et al. 2019



DISCUSSION

- Need more WJs to test whether multiple properties tell a consistent story about their origins
- Combining RVs and transits is essential for a multi-faceted view that reveals origins inconsistencies

REFERENCES

Dawson, Huang et al. 2019, AJ, 158, 65
Dawson & Johnson 2012, ApJ, 756, 122
Dawson & Johnson 2018, ARA&A, 56, 172
Rodriguez et al. 2019, AJ, 157, 191

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