Modeling Spot Signatures of Young Stellar Objects

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Motivations

Star spots enable the detection of stellar rotation periods.

Rotation periods reveal state of star's angular momentum — influenced by presence of disk.

Image: spot coverage of the spot coverage

As the star loses its disk, it spins up.



Challenges

Recovering CTTS rotation periods is difficult! (Especially using ground-based observations)



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Model and Data

Can use the spot model to diagnose:

- Stellar activity level
- Periodic and aperiodic signals
- Influence of spot activity on stellar RV signal



Schaefer et al. (2003,2006)

Model and Data

160

Use spot model to characterize time-series photometry.

K2!



Current and Future Work

Currently developing advanced spot model that will identify:

- Size, location, and quantity of spots
- Accretion signatures



And ultimately...

Help us understand environment in which planets form (or don't!)