The Rossiter-McLaughlin Effect for Transiting Extrasolar Planetary Systems: New Theory and Observation

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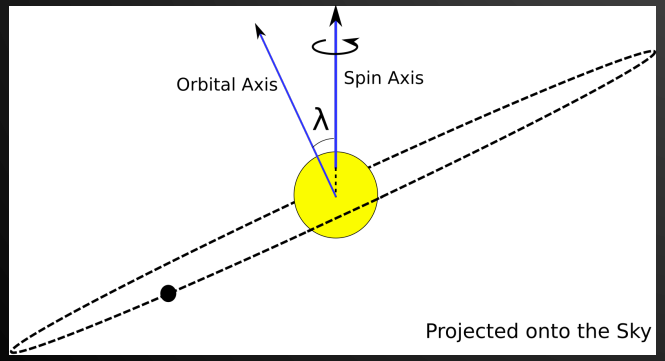
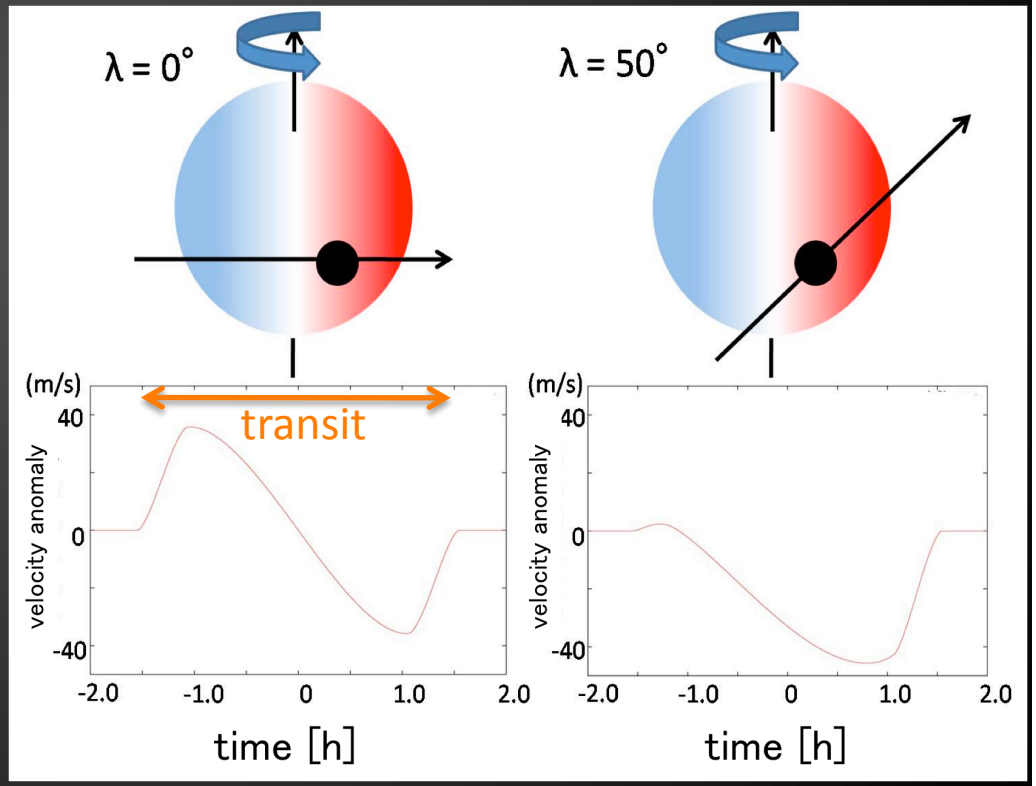
My research interest
→ Transiting exoplanets.

What is the Rossiter-McLaughlin effect?
→ An apparent radial velocity anomaly during a planetary transit.





What's new?

1. We derived a new analytic formula for the RM effect.

$$\delta_{\rm RM} \approx -f \frac{\int_0^\infty \exp[-2\pi^2\beta^2\sigma^2 - 4\pi\gamma\sigma]\tilde{R}(\sigma)\sigma\sin(2\pi\sigma\Delta\lambda)d\sigma}{2\pi\int_0^\infty \exp[-2\pi^2\beta^2\sigma^2 - 4\pi\gamma\sigma]\left\{\tilde{R}(\sigma)\right\}^2\sigma^2 d\sigma}$$

2. We detected the RM effect for an eccentric, small-sized exoplanet (HAT-P-11b).