

SONG and exoplanets:

The discovery and characterization of MASCARA-3

Maria Hjorth

Stellar Astrophysics Centre, Aarhus University

Anders Bo Justesen, Simon Albrecht, The SONG Team, The MASCARA Team



STELLAR ASTROPHYSICS CENTRE



**DANMARKS FRIE
FORSKNINGSFOND**
INDEPENDENT RESEARCH
FUND DENMARK

MARIA HJORTH
PH.D.-STUDENT

SONG 2018 WORKSHOP
24TH OF OCTOBER 2018

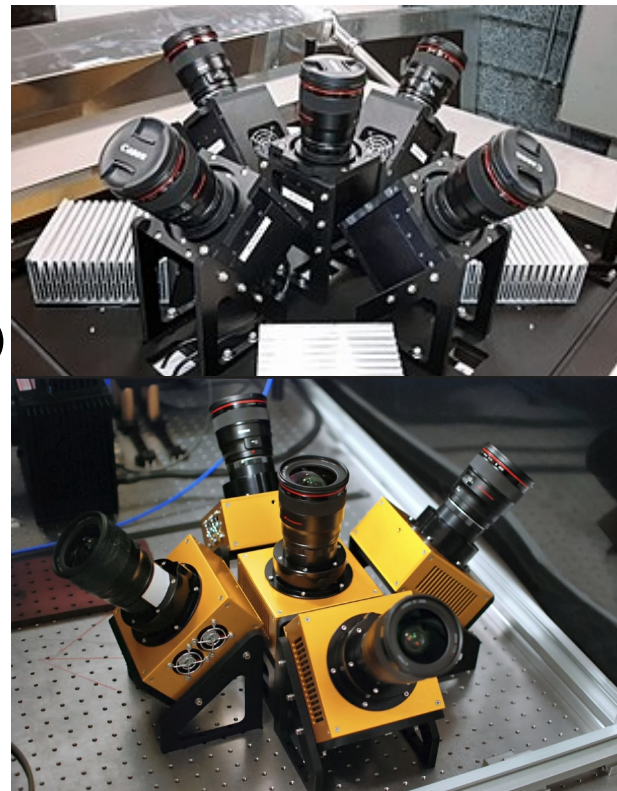
MASCARA (Multi-site All Sky CAmeRA)

- PI: Ignas Snellen (Snellen et al. 2012)
- Targets: hot Jupiters orbiting bright ($V < 8.4$) stars.
- Discovered planets:
MASCARA-1 (Talens et al. 2017)
MASCARA-2 (Talens et al. 2018, Lund et al. 2017)
MASCARA-3 (Hjorth et al. in prep.)



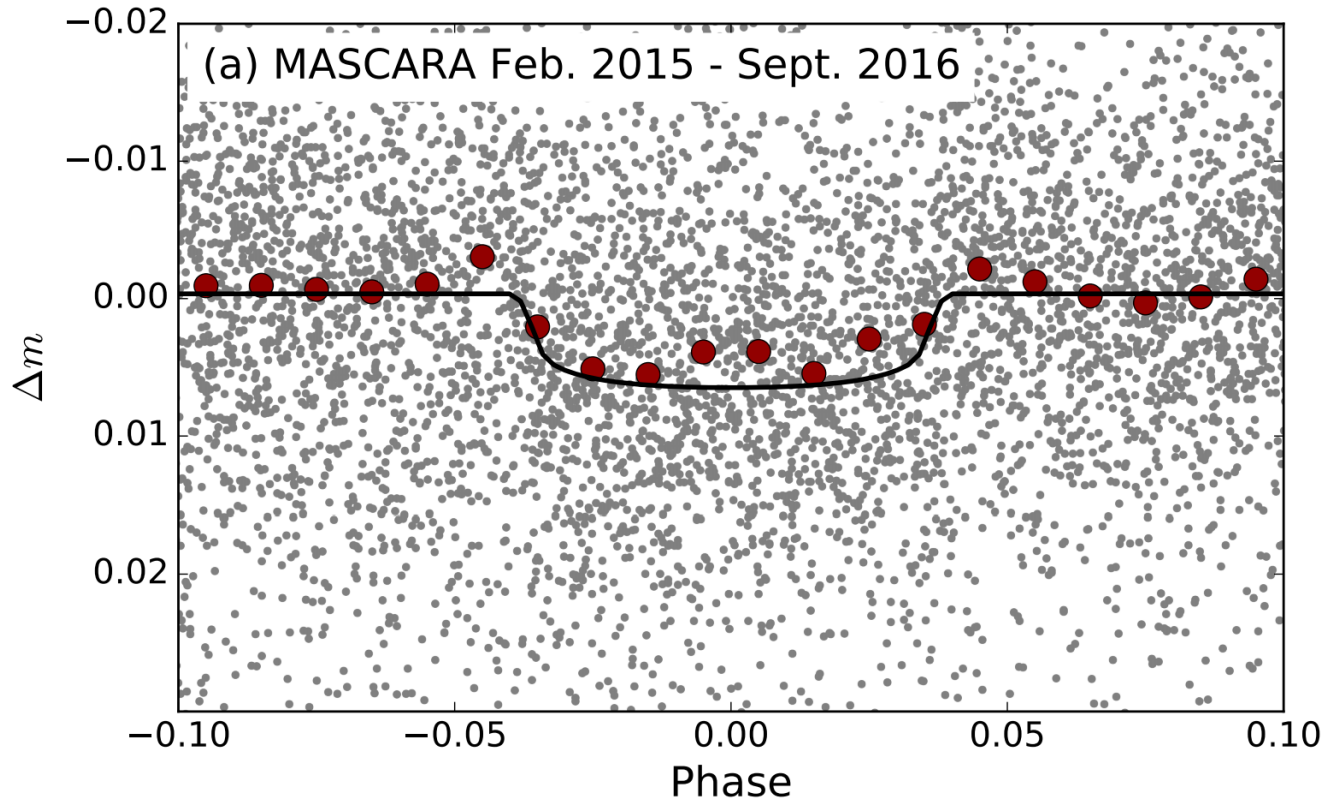
Multi-site All Sky CAmeRA

Finding the brightest transiting planet systems in the sky...



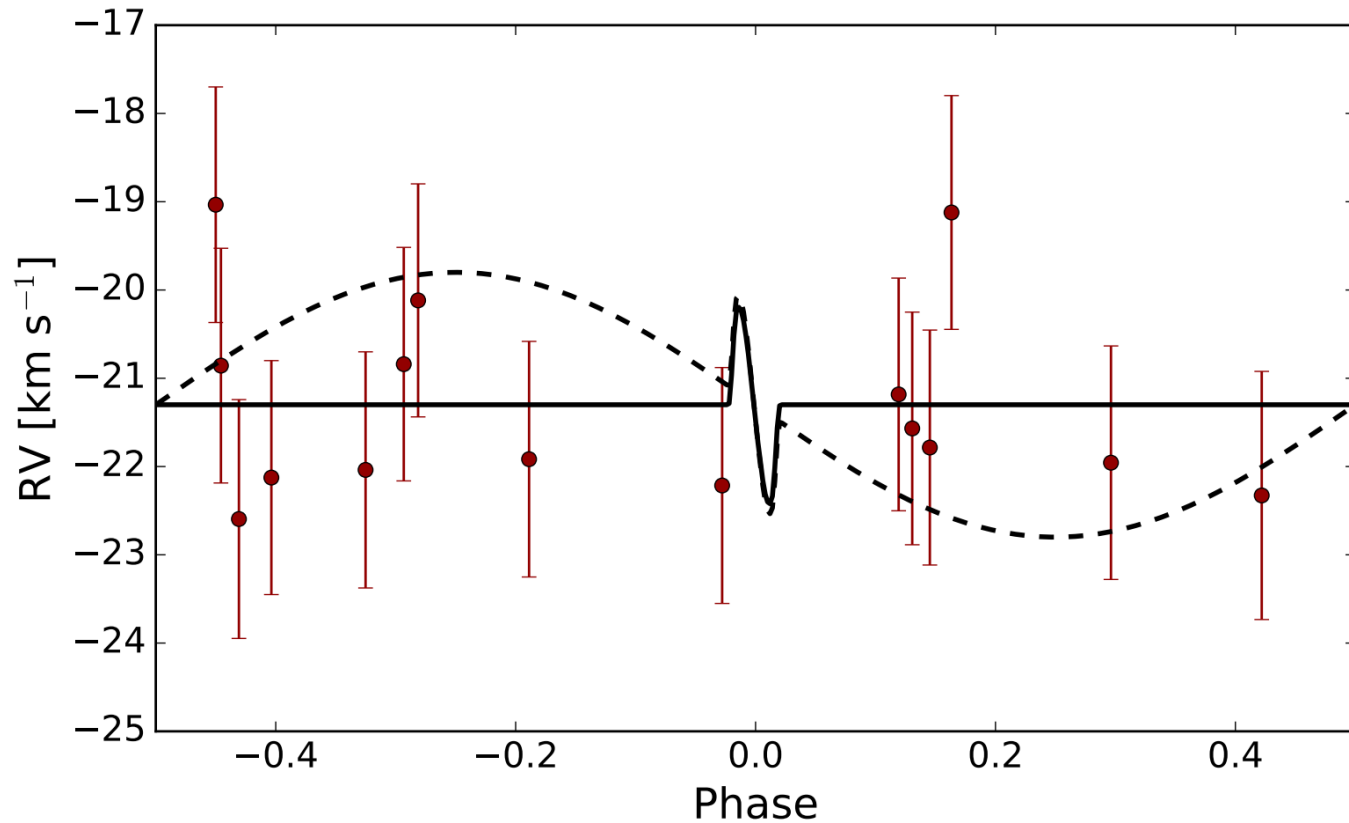
Credit: G. J. J. Talens & J. Spronck

MASCARA (Multi-site All Sky CAmERA)

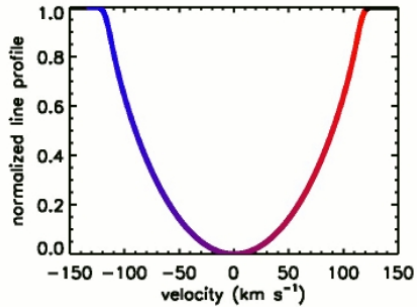
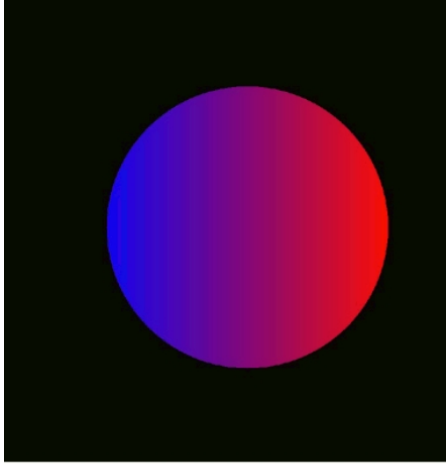


SONG & MASCARA: RVs?

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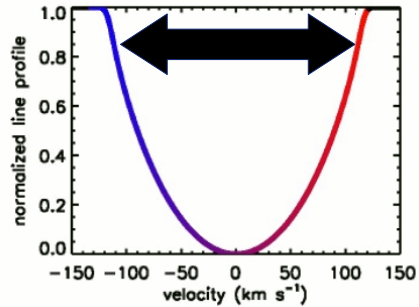
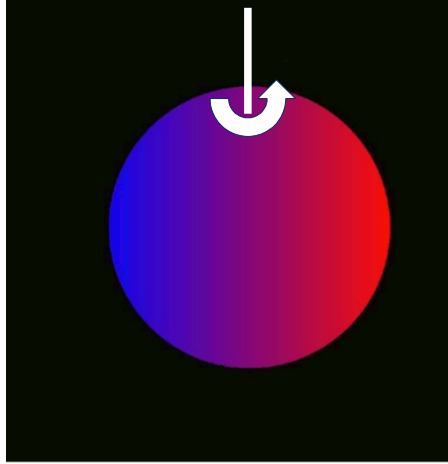


A spectroscopic transit



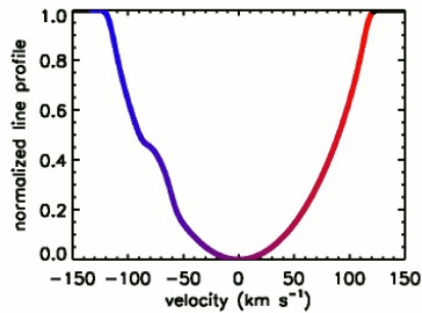
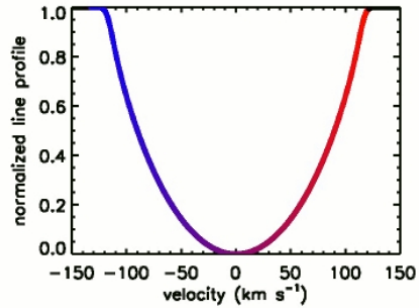
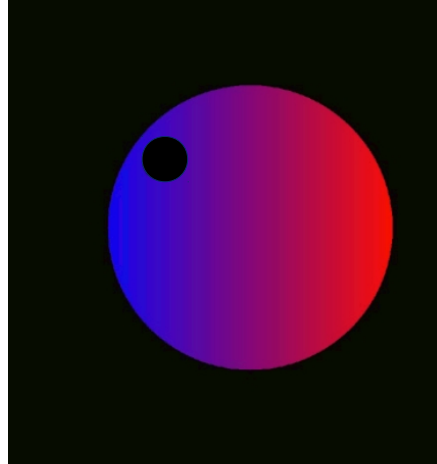
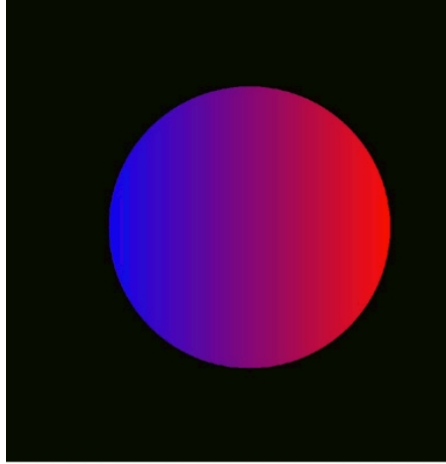
Figures: Marshall C. Johnson (see his webpage for more animations)

A spectroscopic transit



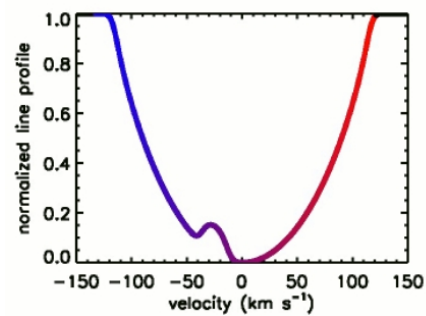
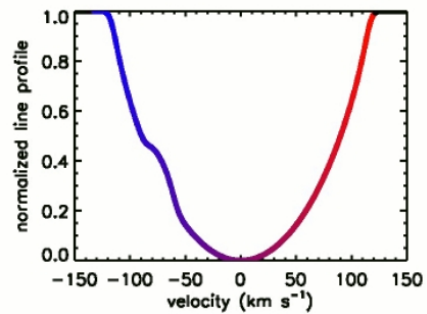
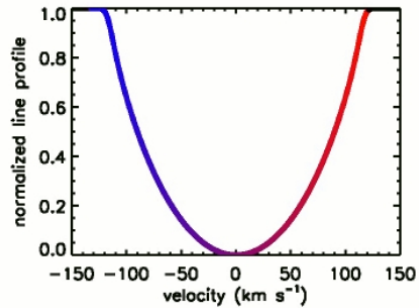
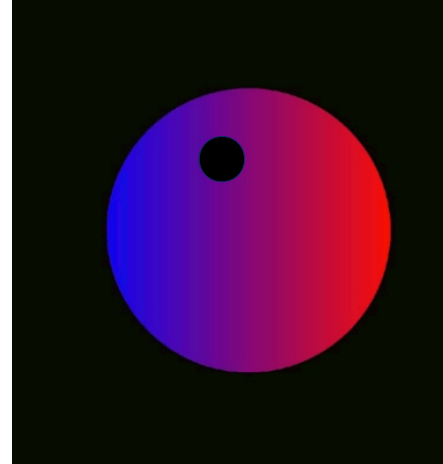
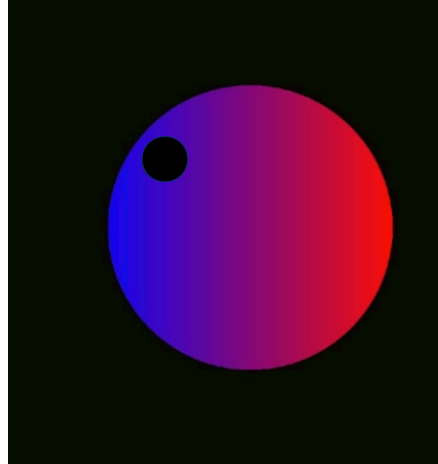
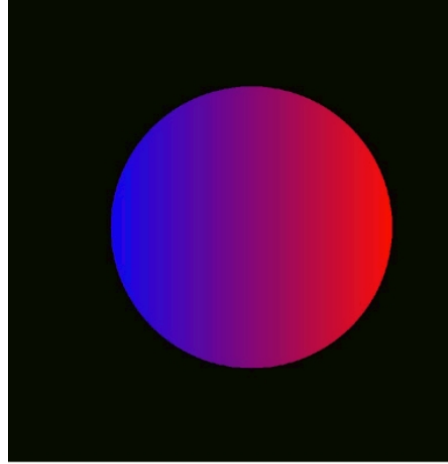
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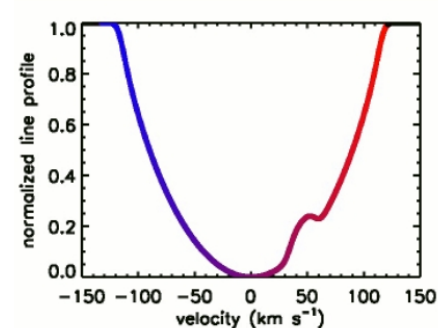
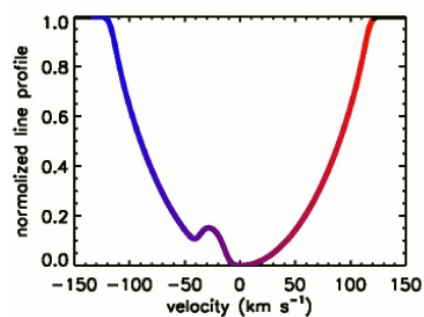
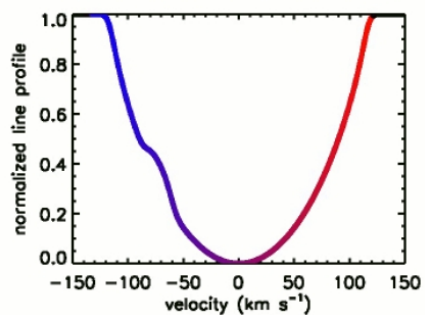
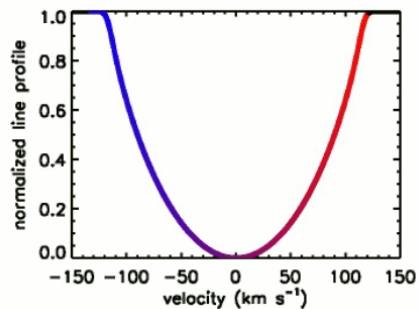
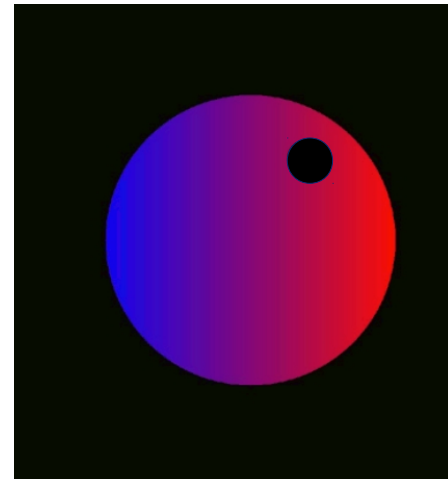
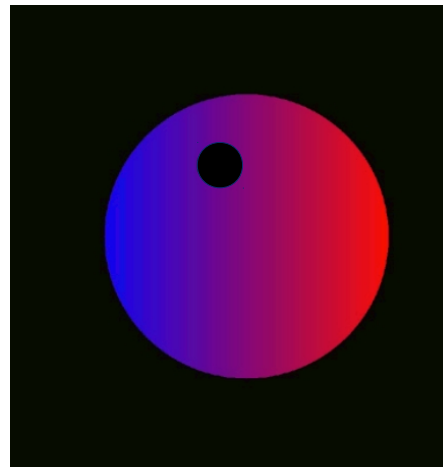
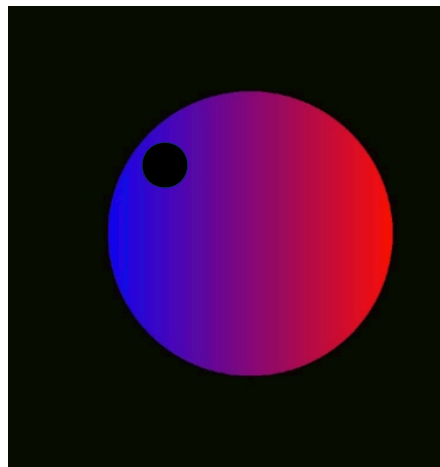
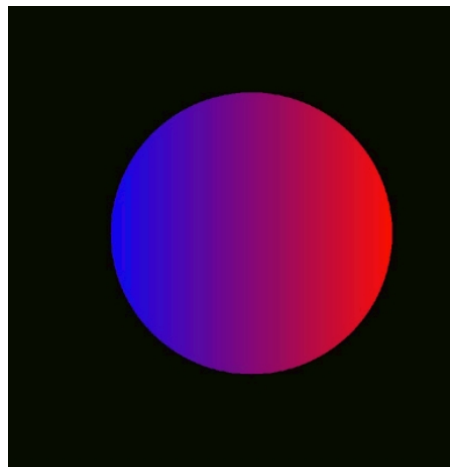
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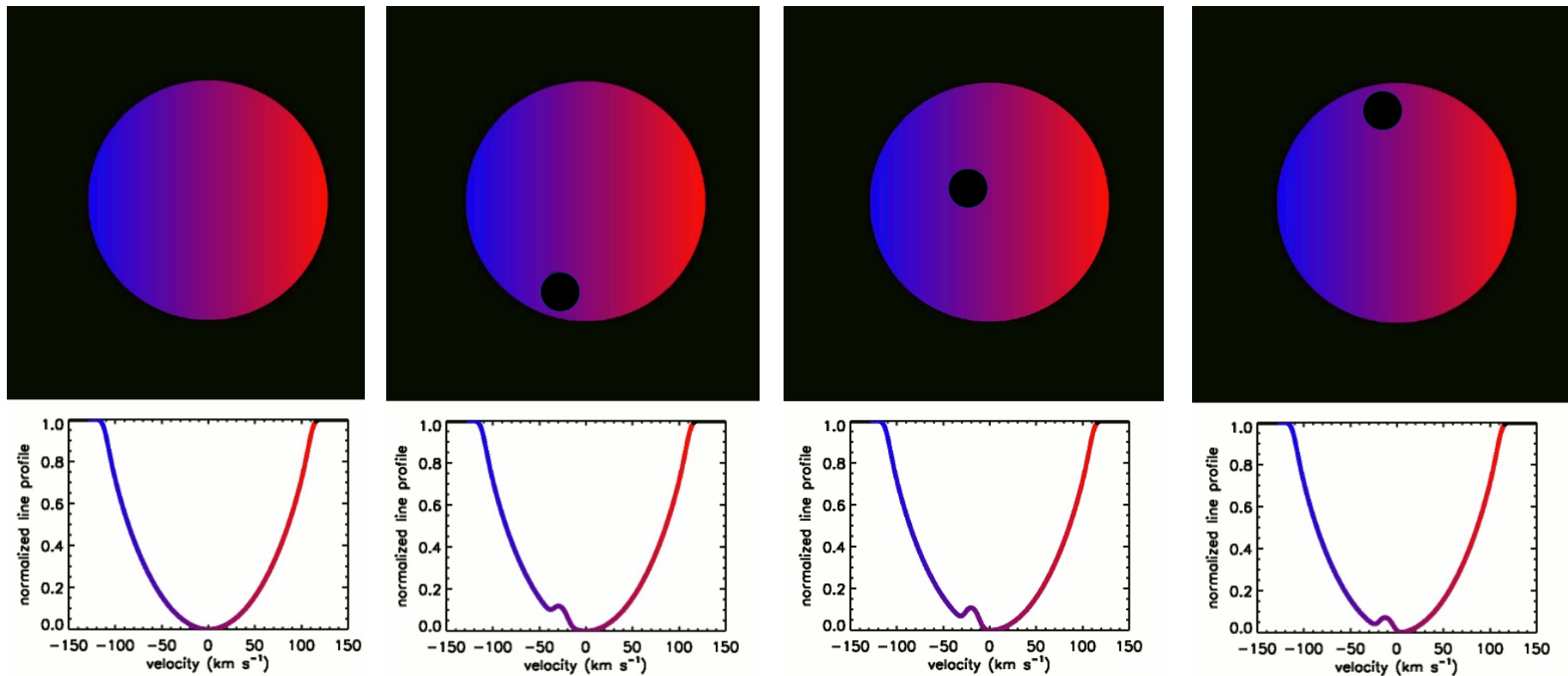
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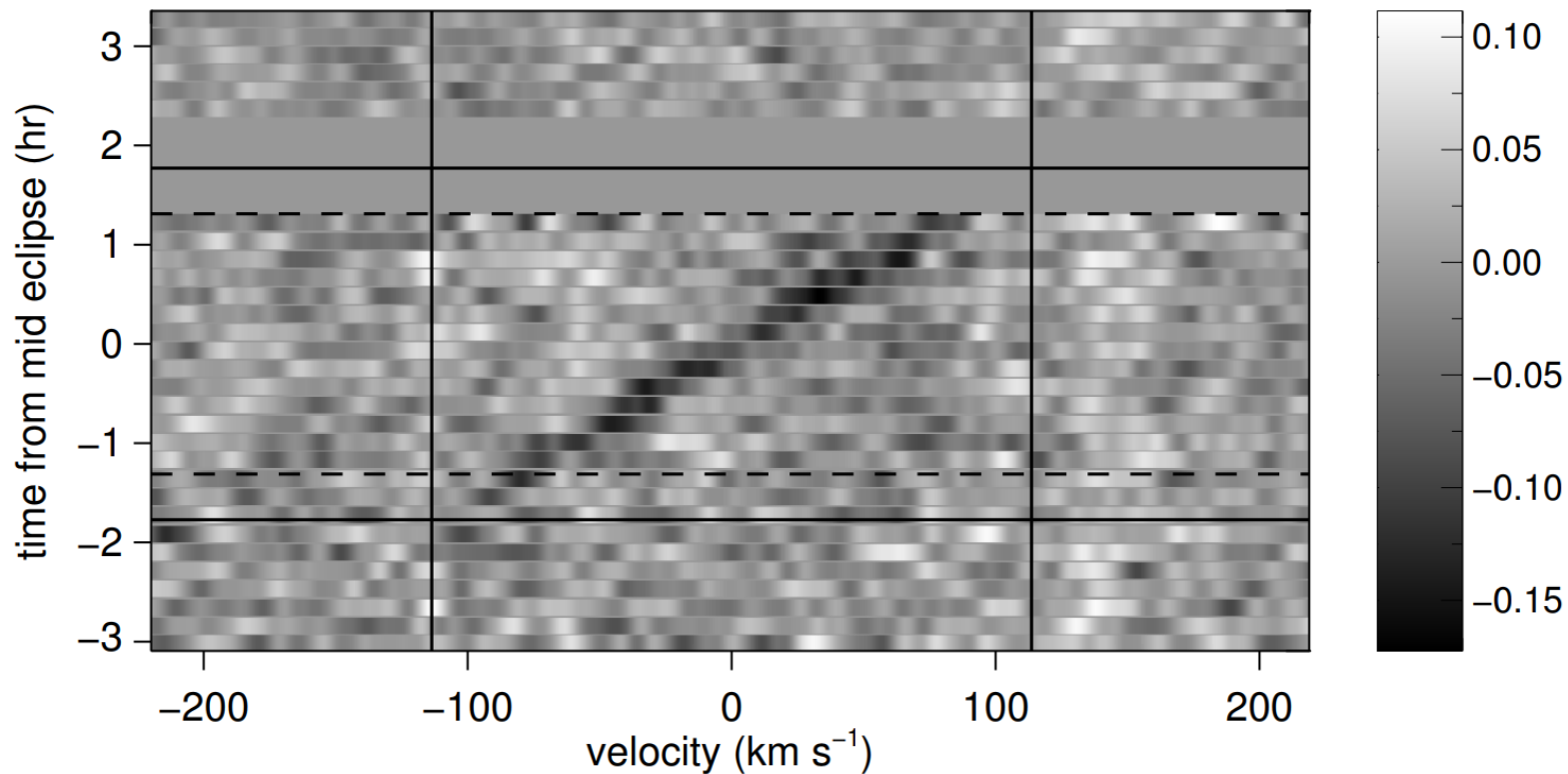
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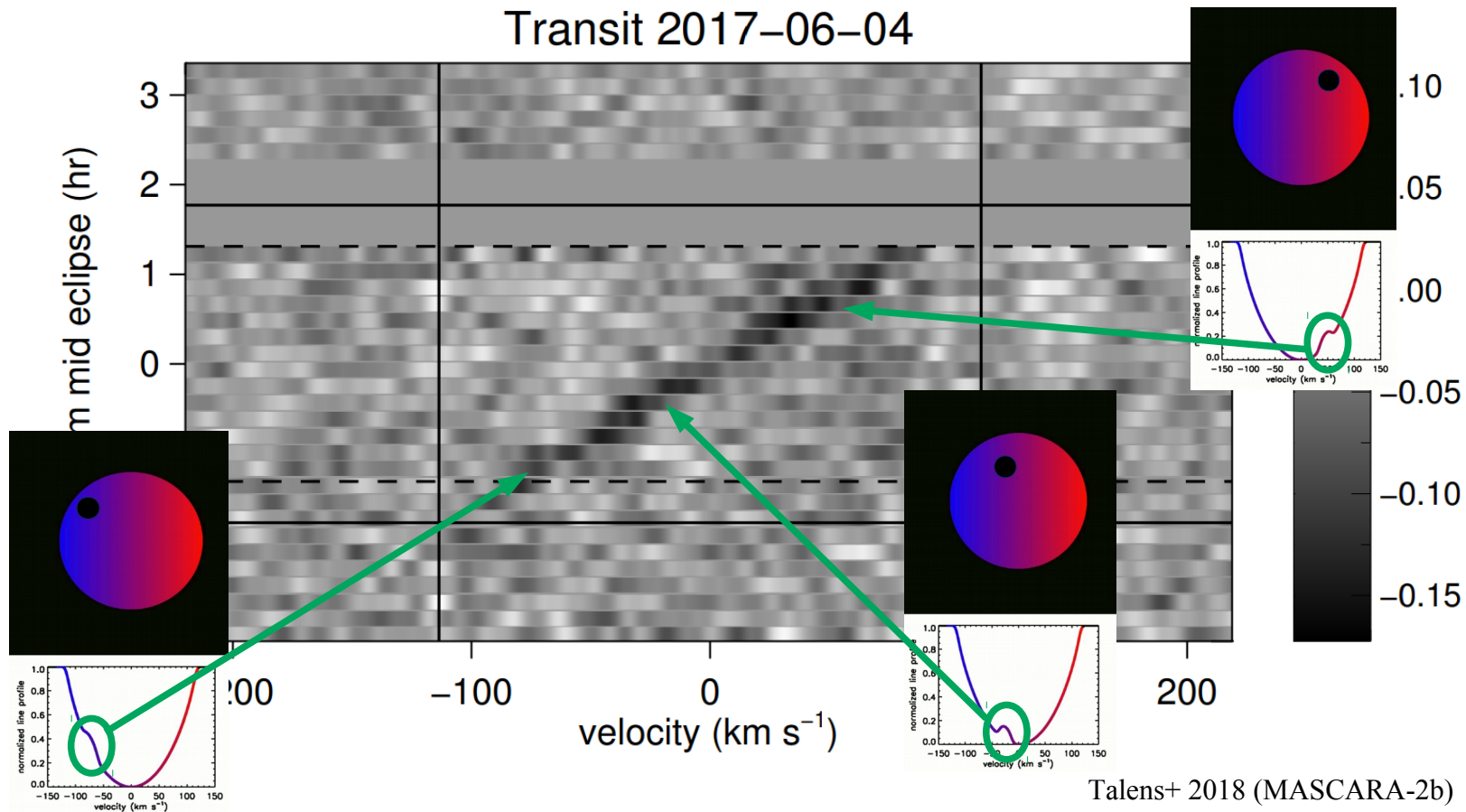
SONG & MASCARA: The Doppler shadow

Transit 2017-06-04

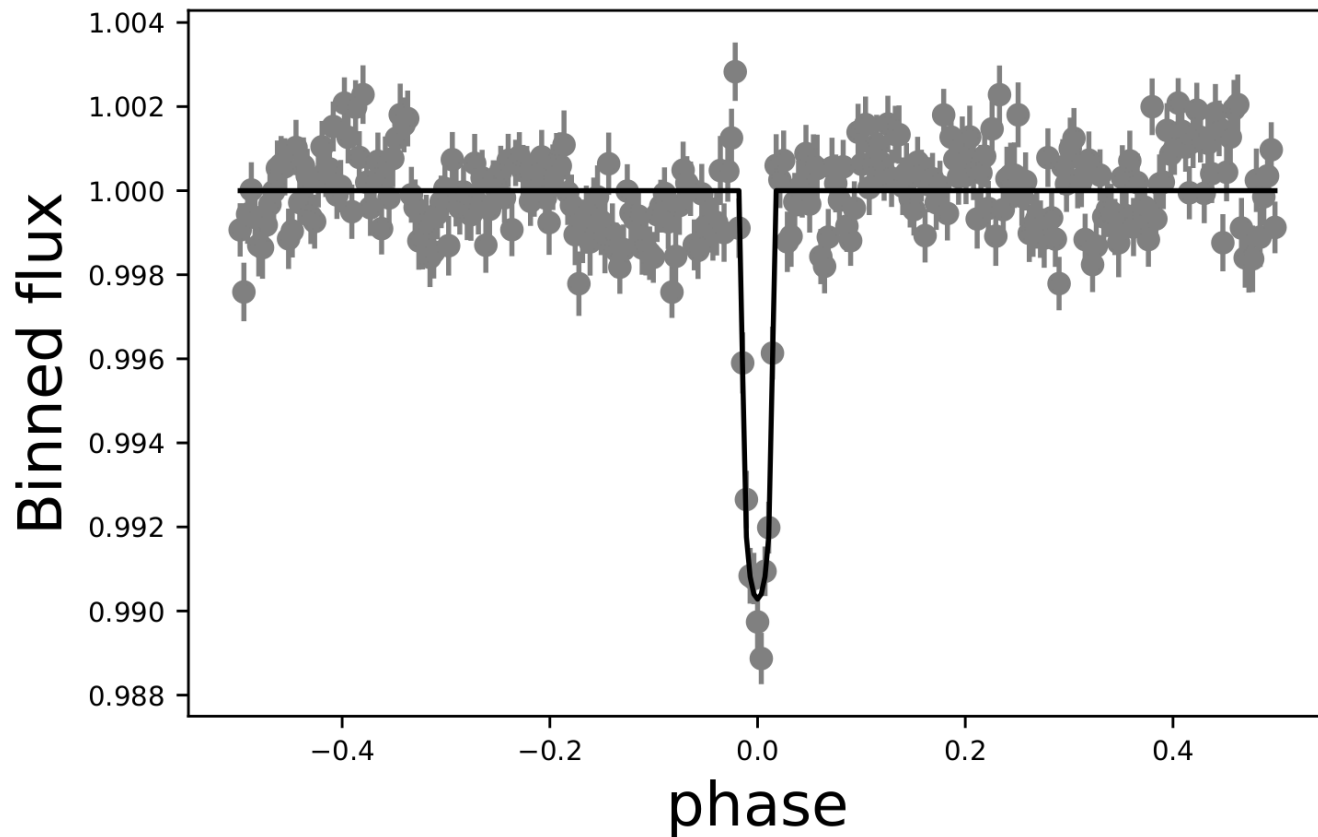


SONG & MASCARA: The Doppler shadow

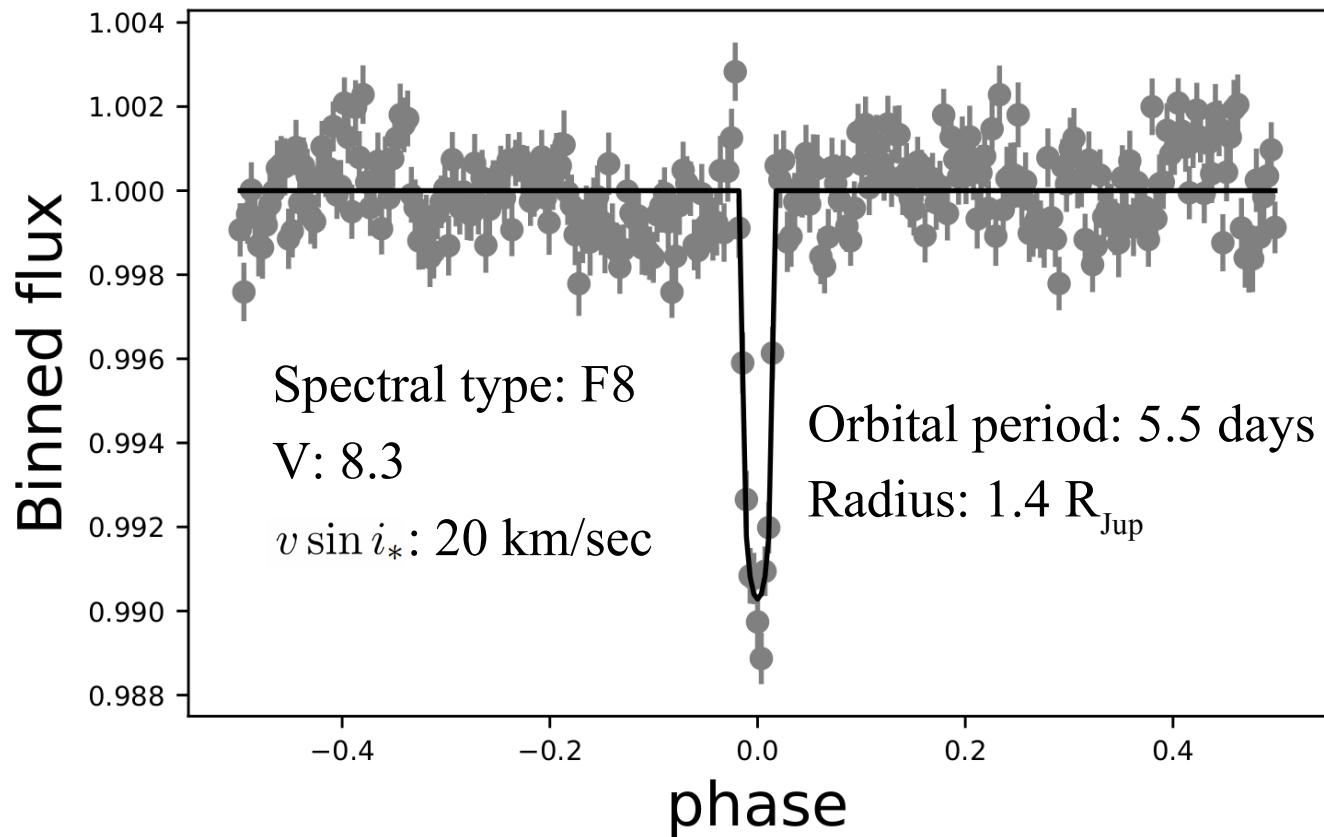
Transit 2017-06-04



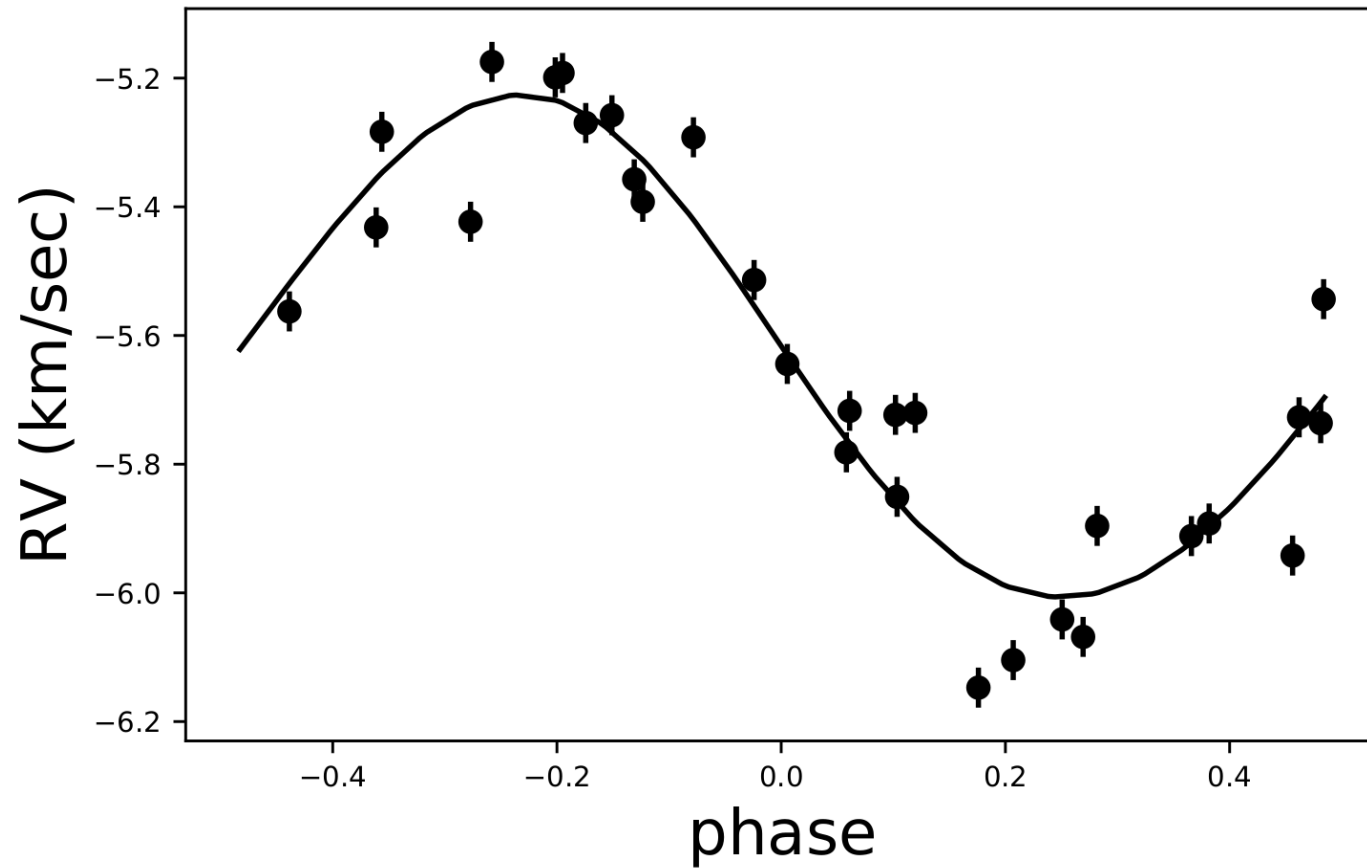
MASCARA-3: MASCARA photometry



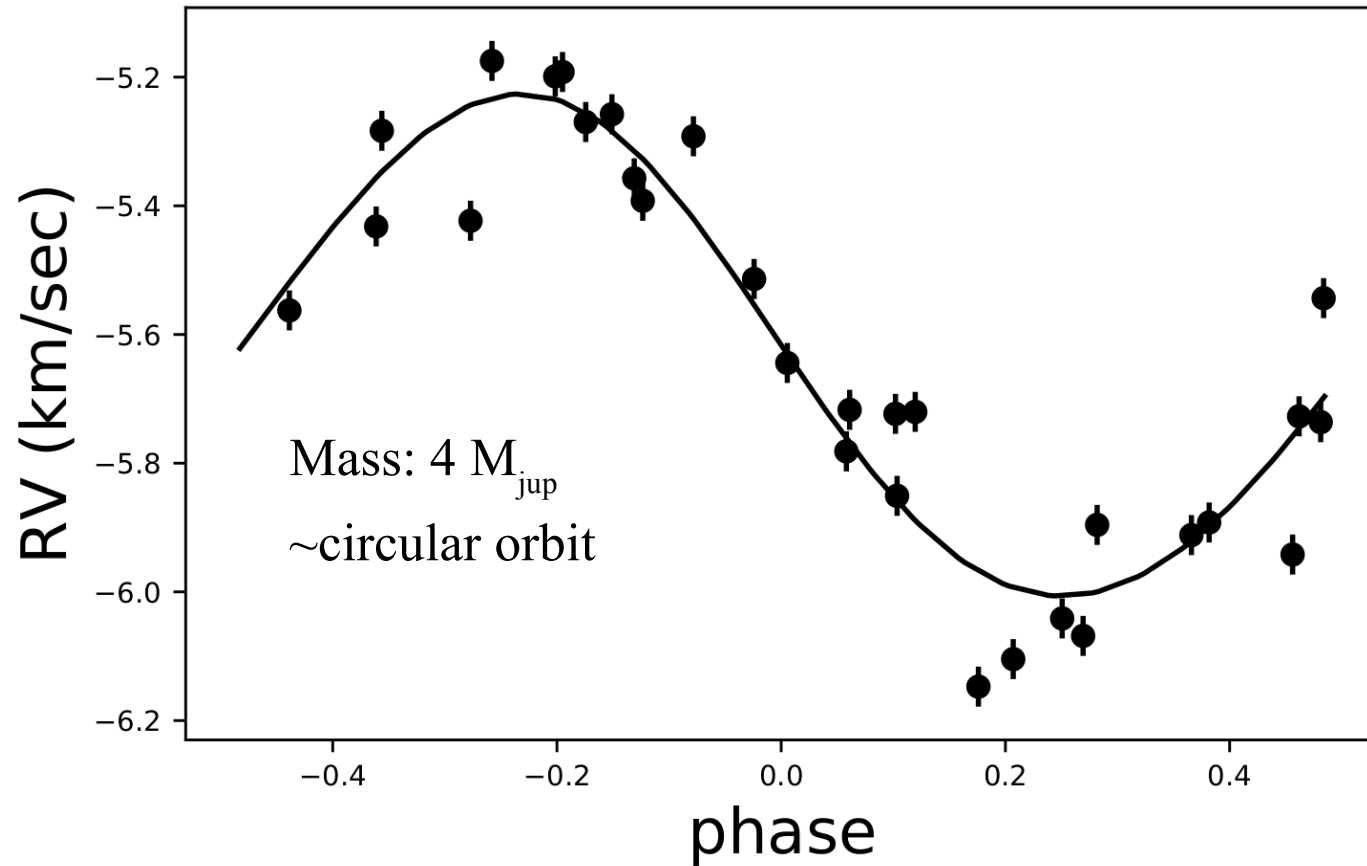
MASCARA-3: MASCARA photometry



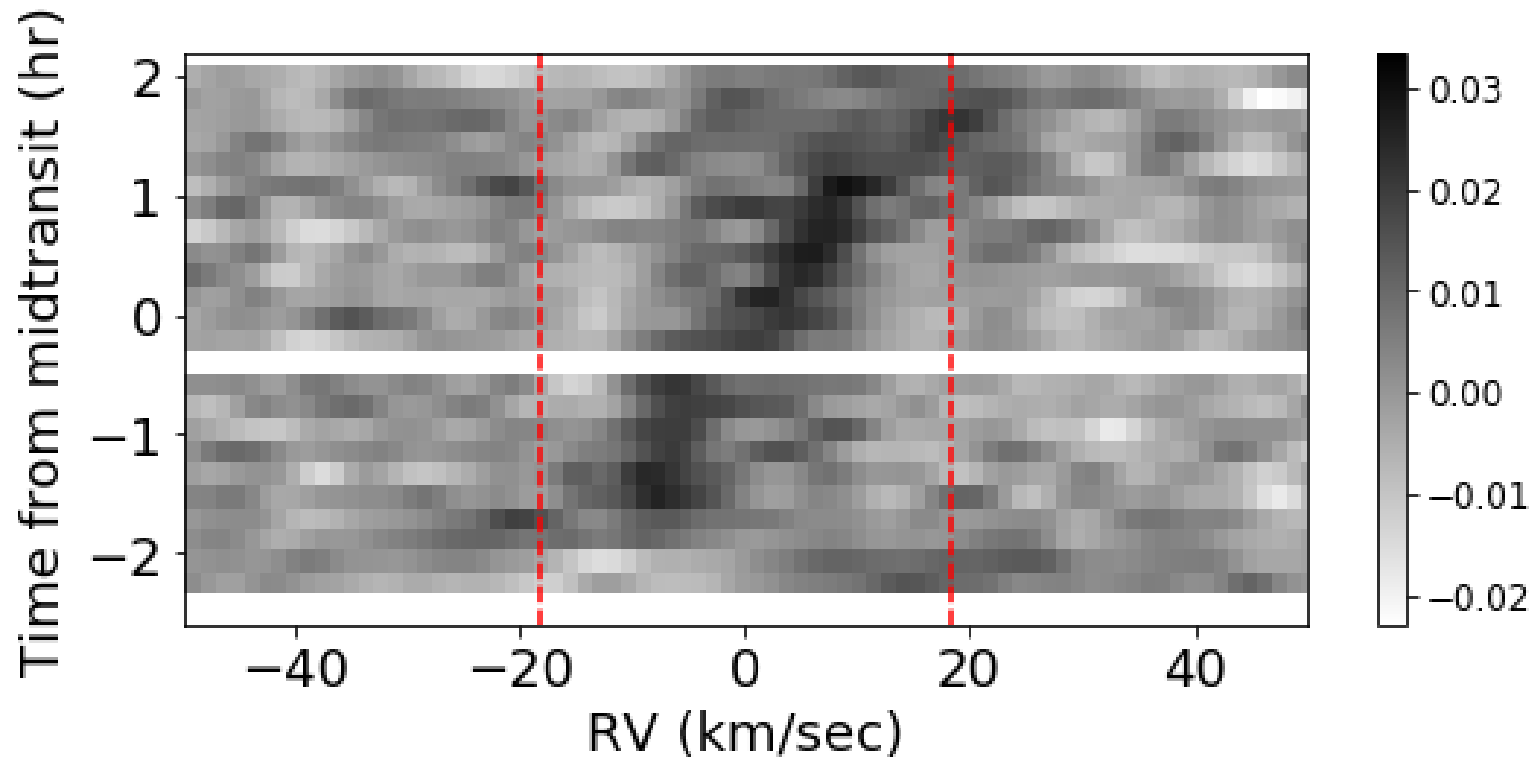
MASCARA-3: SONG RVs



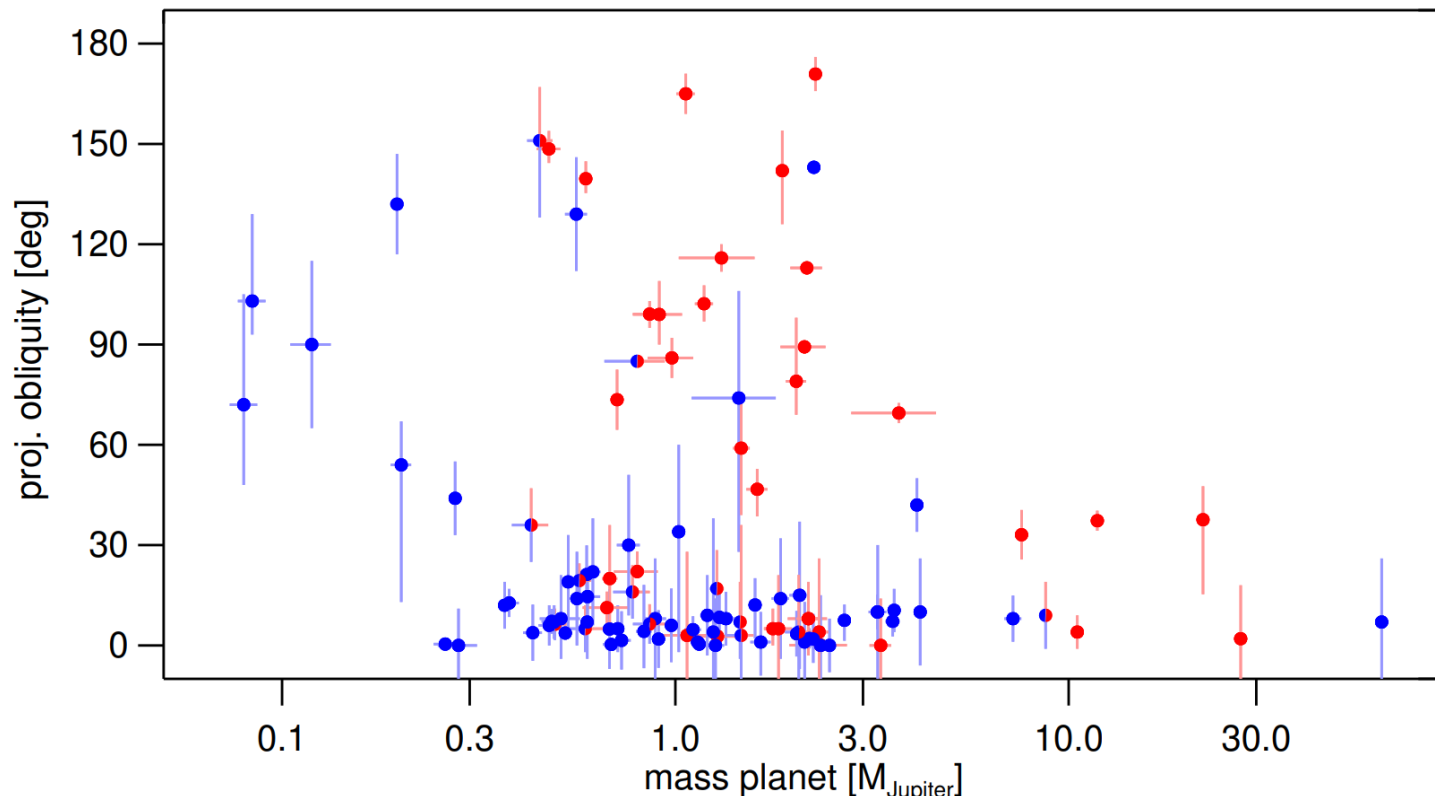
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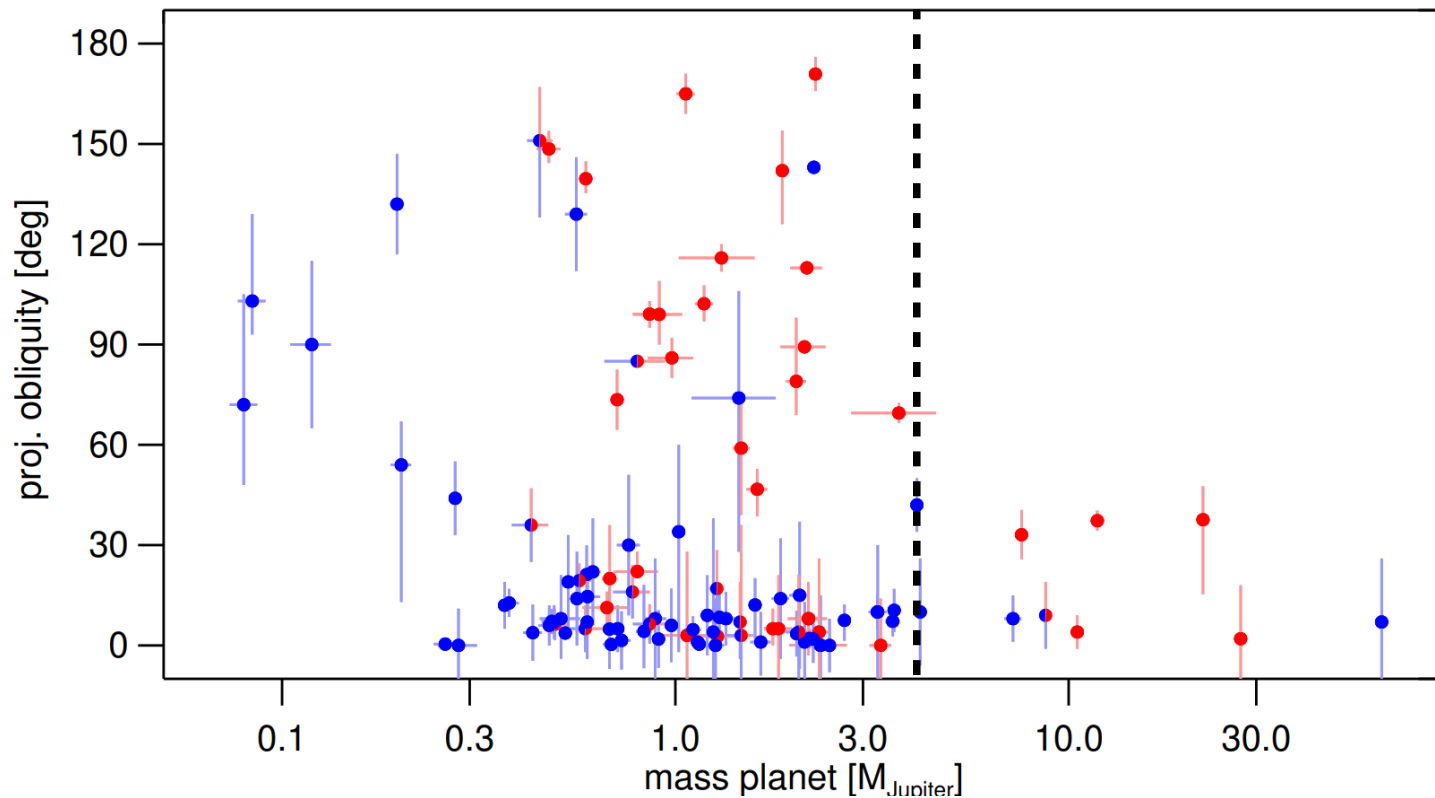
MASCARA-3: SONG spectroscopic transit



MASCARA-3: Dynamics and formation

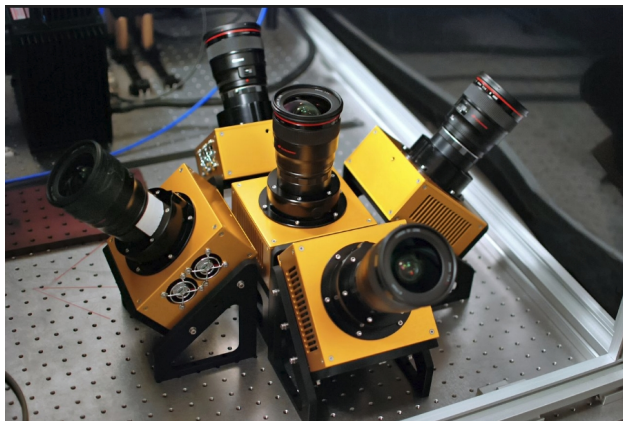


MASCARA-3: Dynamics and formation



Summary: SONG & MASCARA

- Confirmation of planets: spectroscopic transit follow-up with SONG.
- Detection: Two (soon three) hot Jupiters orbiting bright stars.
- MASCARA-3: sufficient precision for *both* RV follow-up and spectroscopic transit follow-up with SONG.
- Very promising for SONG follow-up of TESS targets.



Credit: G. J. J. Talens & J. Spronck



Credit: M. F. Andersen



Credit: NASA

Questions?



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