Surveying exoplanets across the spectrum

Following the TraCS of exoplanets

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Motivation

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• Why observe in multi-band?

• What can be done with NIR?



Context | Transits



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Context | Transits

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Context | False-positives



Context | False-positives



Context | 3KK

3-Channel Camera (3KK)

- 2 CCD + CMOS = 3 x4MP
- FOV 6.8' x 6.8'
- ~0.20 arcsec/px
- Blue CCD: ugr
- Red CCD: iz
- NIR CMOS: YJHKs
- Achieved LC precision: 1-3 mmag/min, V=13mag

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Context | Multiband photometry





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Context | Real data + simulations



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Context | Simulation



Context | Real data



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Results | Two cool hot Jupiter hosts



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Results | PP140_14711 radial velocity



Context | TraCS survey

- Ground-based observations complement Spitzer
- **Tra**nsit **C**olor **S**ignature survey: Record multi-band primary + secondary
- Goal: improve planet parameters, measure thermal emission
- Survey started Aug 2018 with 19 targets
- Estimated survey duration: 2 years

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Results | Qatar-4b secondary transit



- 3 partial secondary eclipses recorded Sep.-Oct. 2018
- ~0.35% secondary eclipse visible <-> Tplanet ~2000K
- More observations needed for complete phase-folded curve

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Summary

- Confirming exoplanets is a challenge, present and future
- Multiband can be an alternative to radial velocities
- Planets have been (and will be) confirmed with multiband
- NIR secondary eclipses can be observed from the ground



Thank you for your attention!



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Backup | Qatar-4b primary transits



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