
Light curve analysis and modeling



Brigitta Sipőcz
RoPACS ESR
University of Hertfordshire, UK

RoPACS Meeting, München, 10th May 2010

Outline

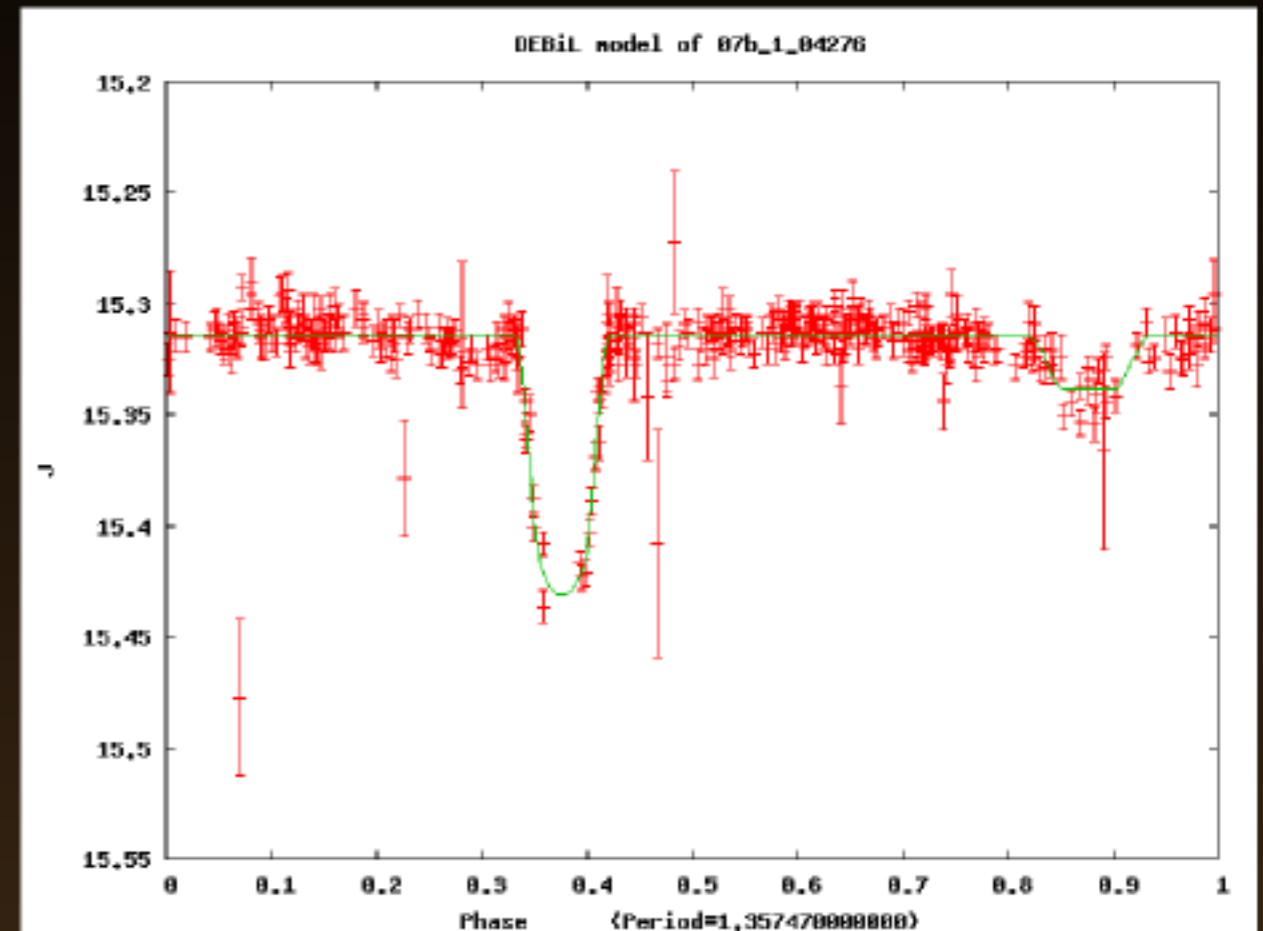
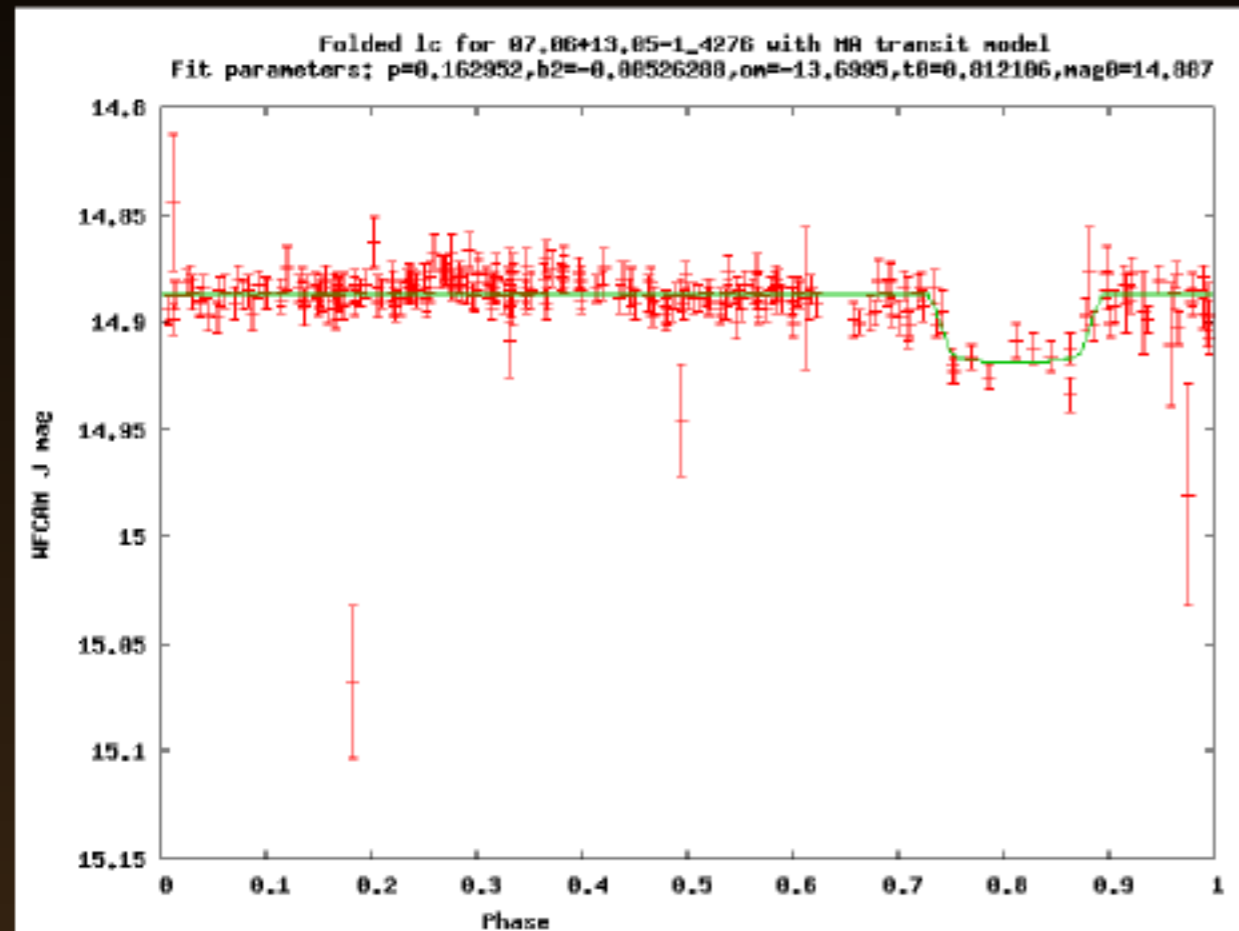
- **Candidate prioritization**
- **INT follow up**
- **Light curve modeling**

WTS candidate prioritization

- Lesson learnt on epoch numbers
- Spectral type from color information
- Relative planetary radii
- X-ray catalogue
- ...
- priorities: P1/P2 and B
- Candidate and follow-up management

(Please use and comment the Best candidate page and google calendar)

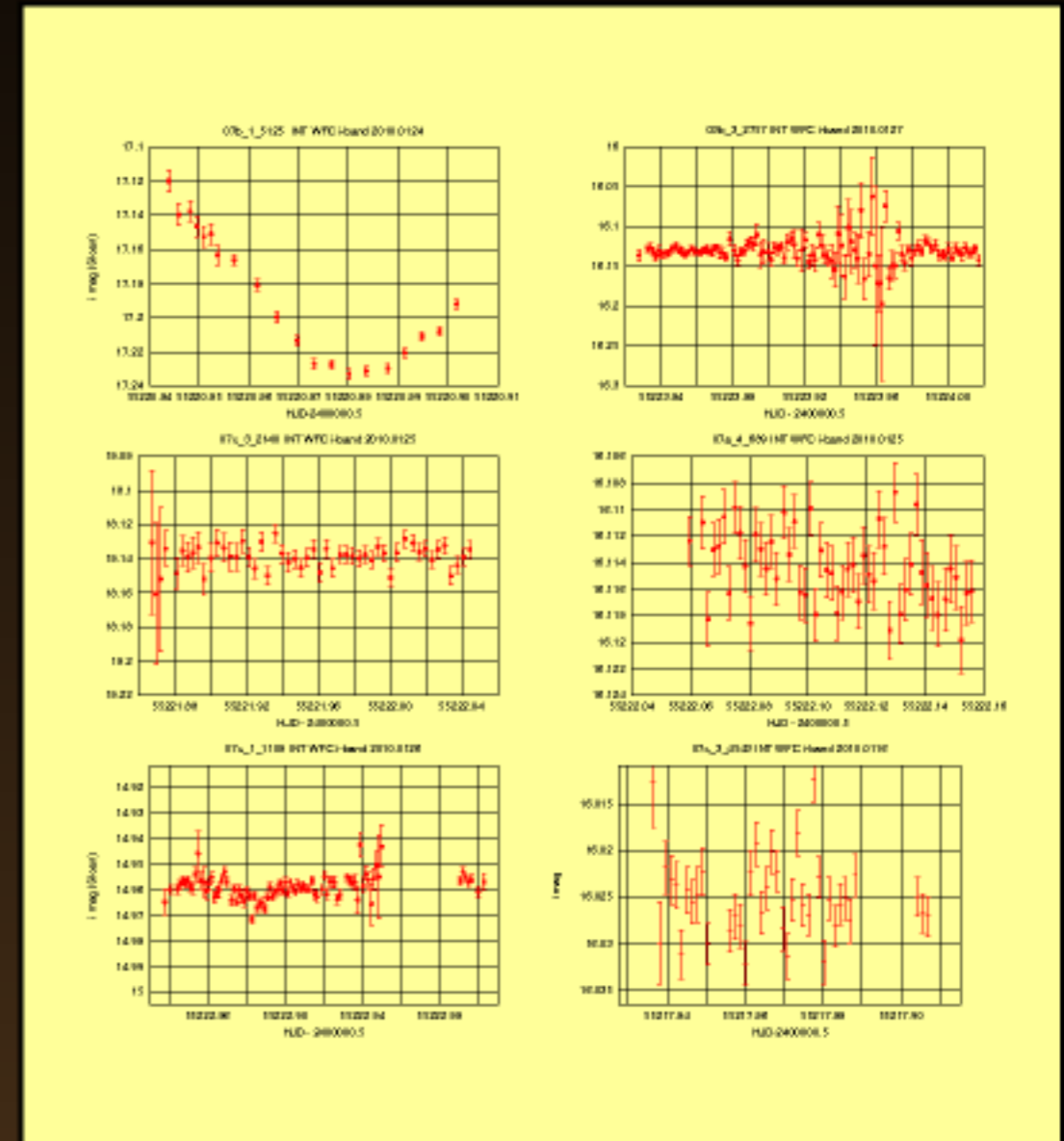
An example:



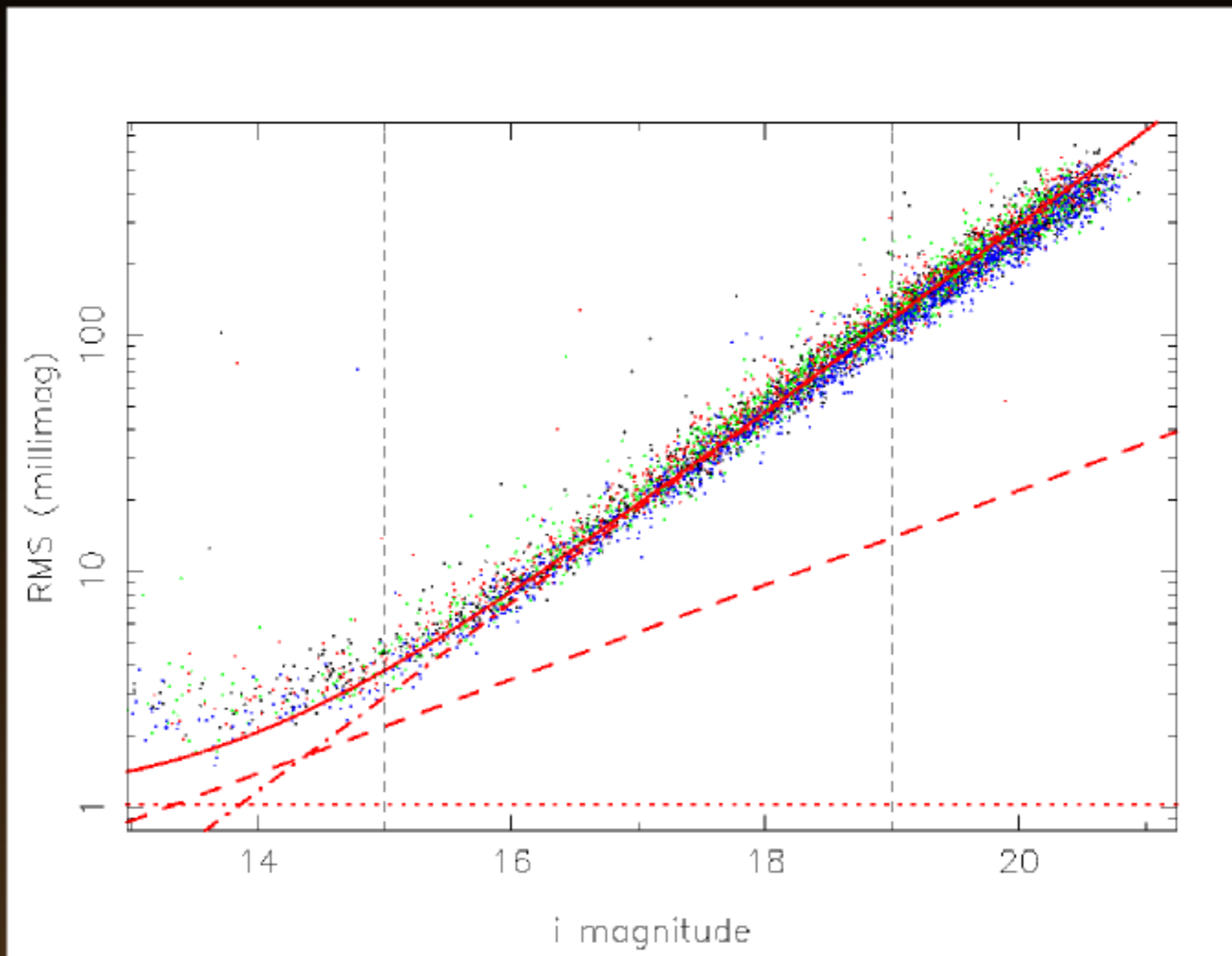
- Nice flat bottom transit detection of 3 epochs
- New WTS data: deep primary eclipse

INT photometry follow-up

- 4 nights in January (PI: DP), 2 nights usable due to the weather
- Unfortunate candidate visibility
- Moon is close-by
- Reduced data with CASU pipeline

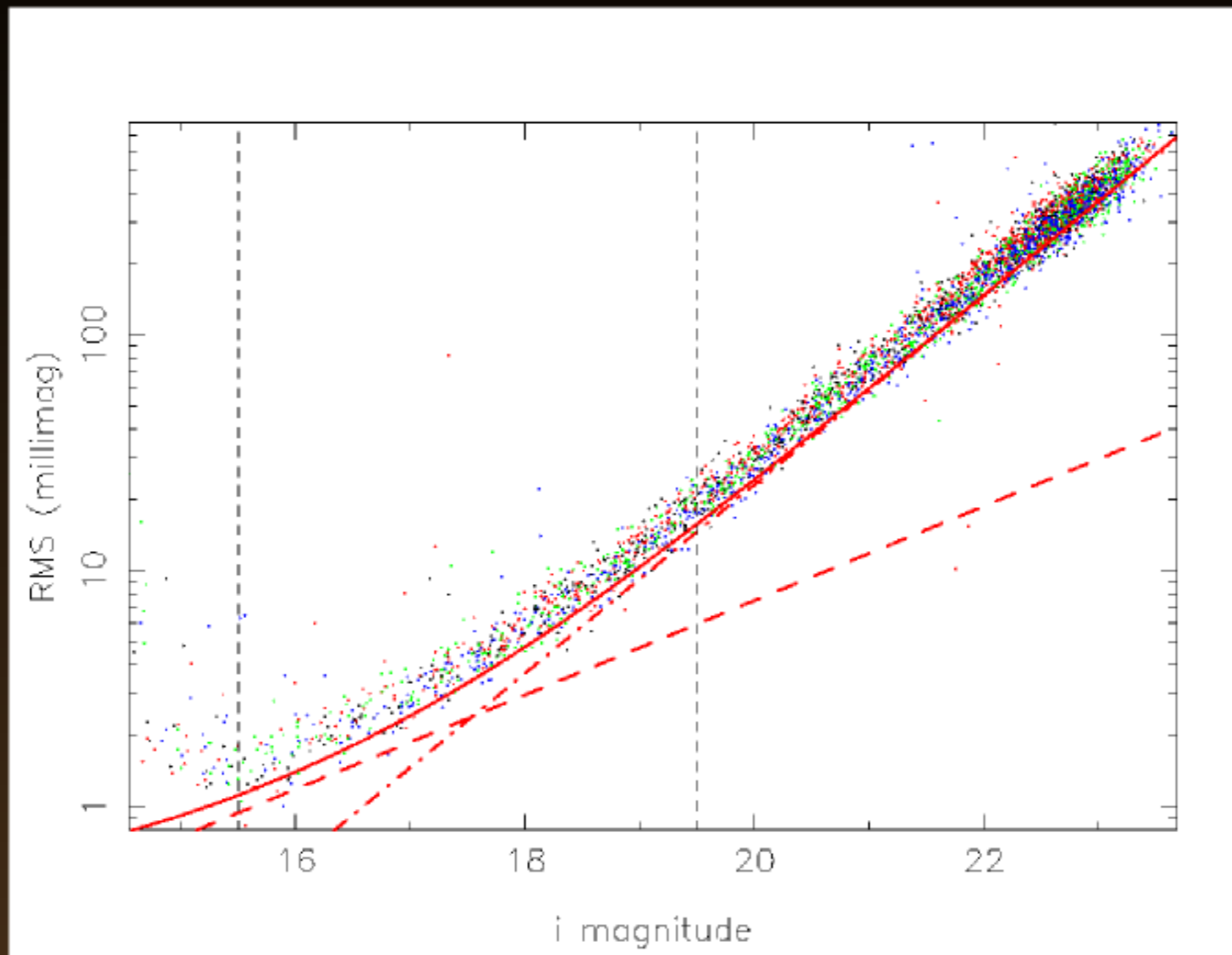


INT follow-up precision



03b_3_2757, 90s, moonlight

INT follow-up precision



pr, 300s, moonless

Light curve modeling

- Occfit results are only for detection (DO NOT use occfit parameters from candidate list)
- Models are needed to get planetary/binary parameters
 - Using binary star models
 - * EBOP, WD, DEBiL
 - Using planetary models
 - * Mandel-Agol
- Measurement errors are essential for modeling

Automatized binary modeling with DEBiL

- Pro

- Fast, simple method
- Designed for large datasets
- Easy to build in automated pipeline
- Initial starting guess of parameters for other fitters

- Con

- Designed for fully detached systems
- Not accurate enough for semi-detached and contact systems (not handling mass transfer, tidal distortion, etc.)
- EBOP usually gives a better fit

Future work to be done...

- Simultaneous modeling of WTS and follow-up light curves (altogether with RVs when we have them)
- Participating in upcoming follow-ups
- Candidate prioritisation and tracking

