# MOA-2011-BLG-293

Jennifer Yee
Ohio State University

in collaboration with

OGLE, MOA, MicroFUN

arXiv:1201.1002

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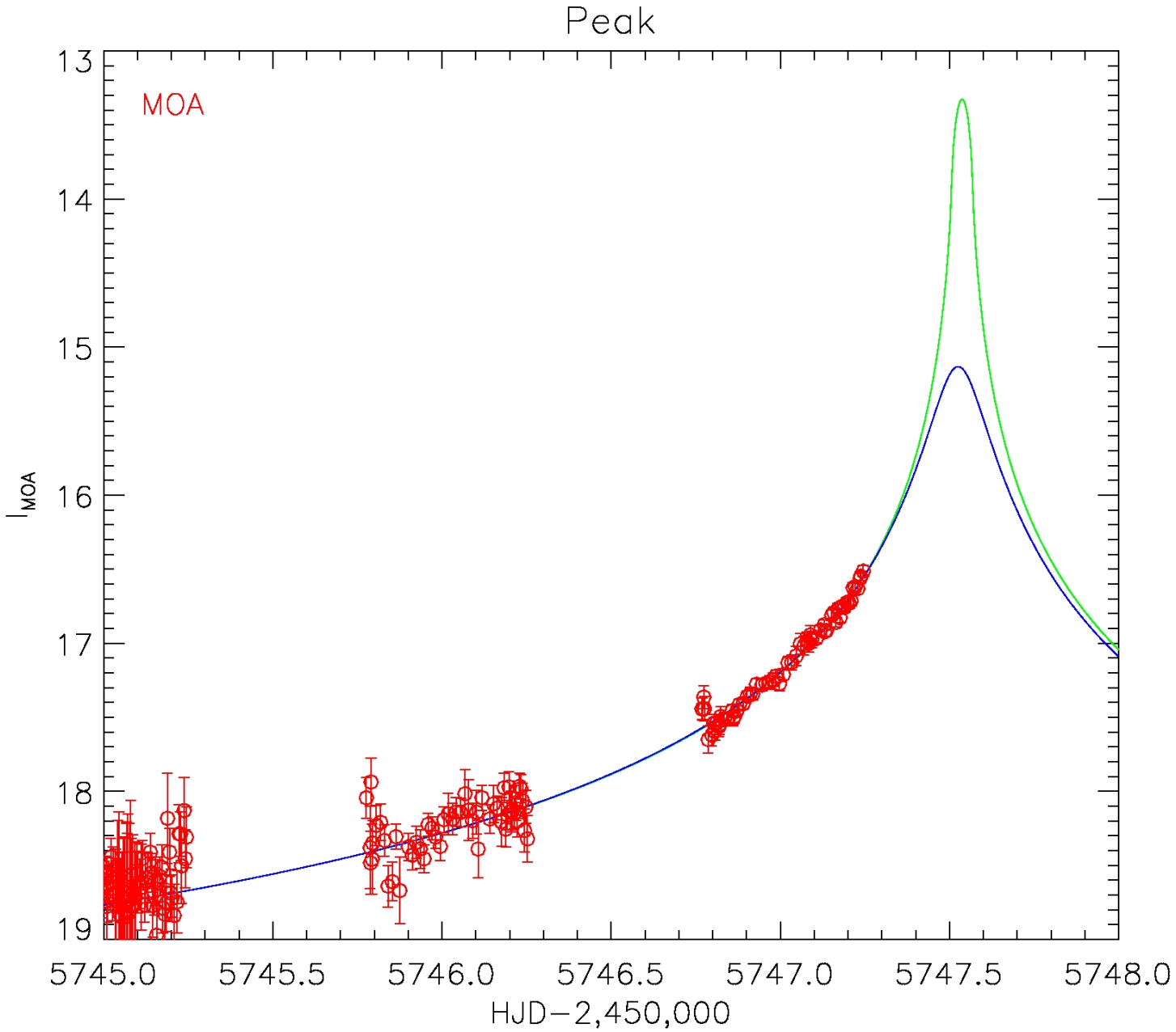
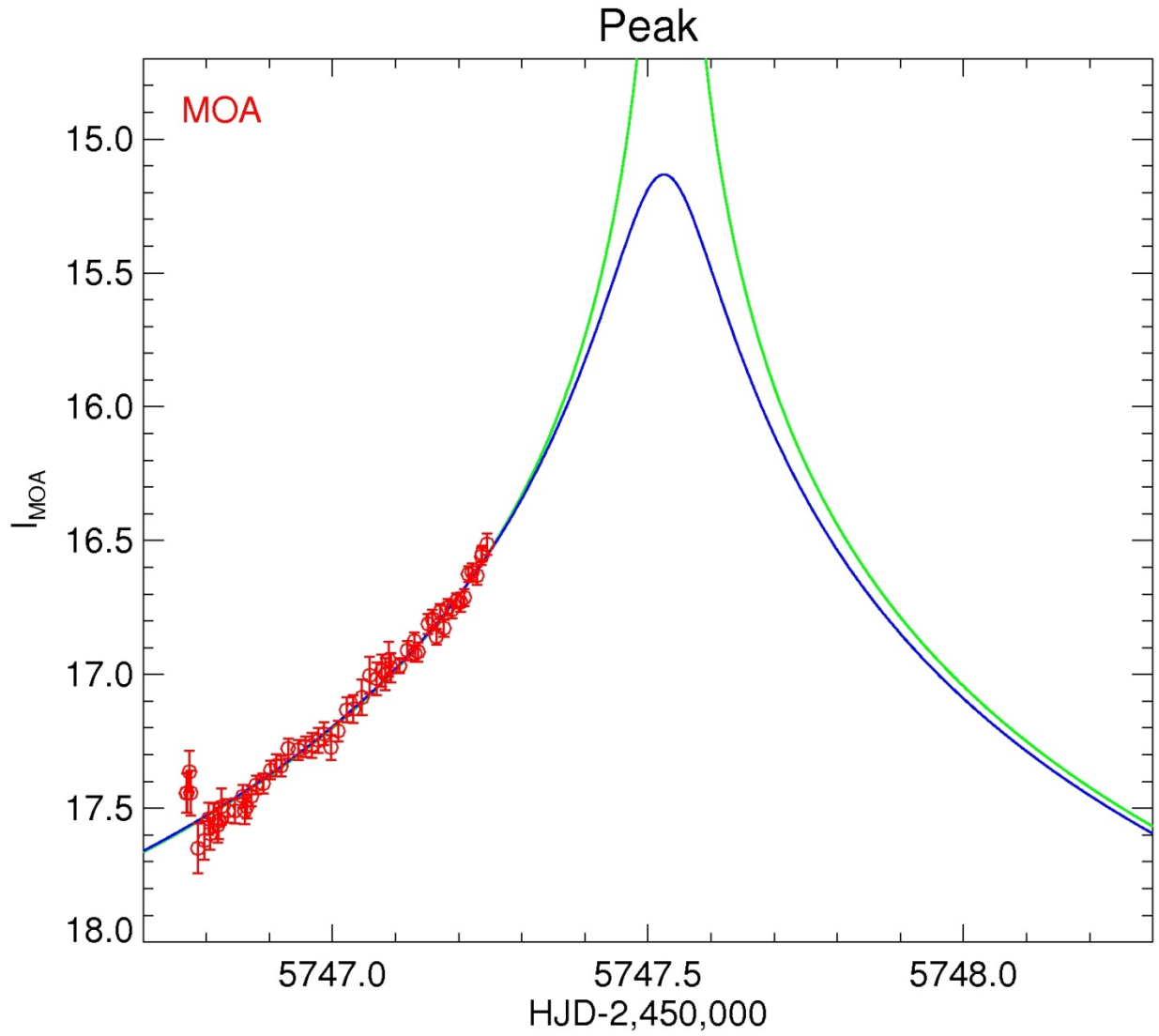
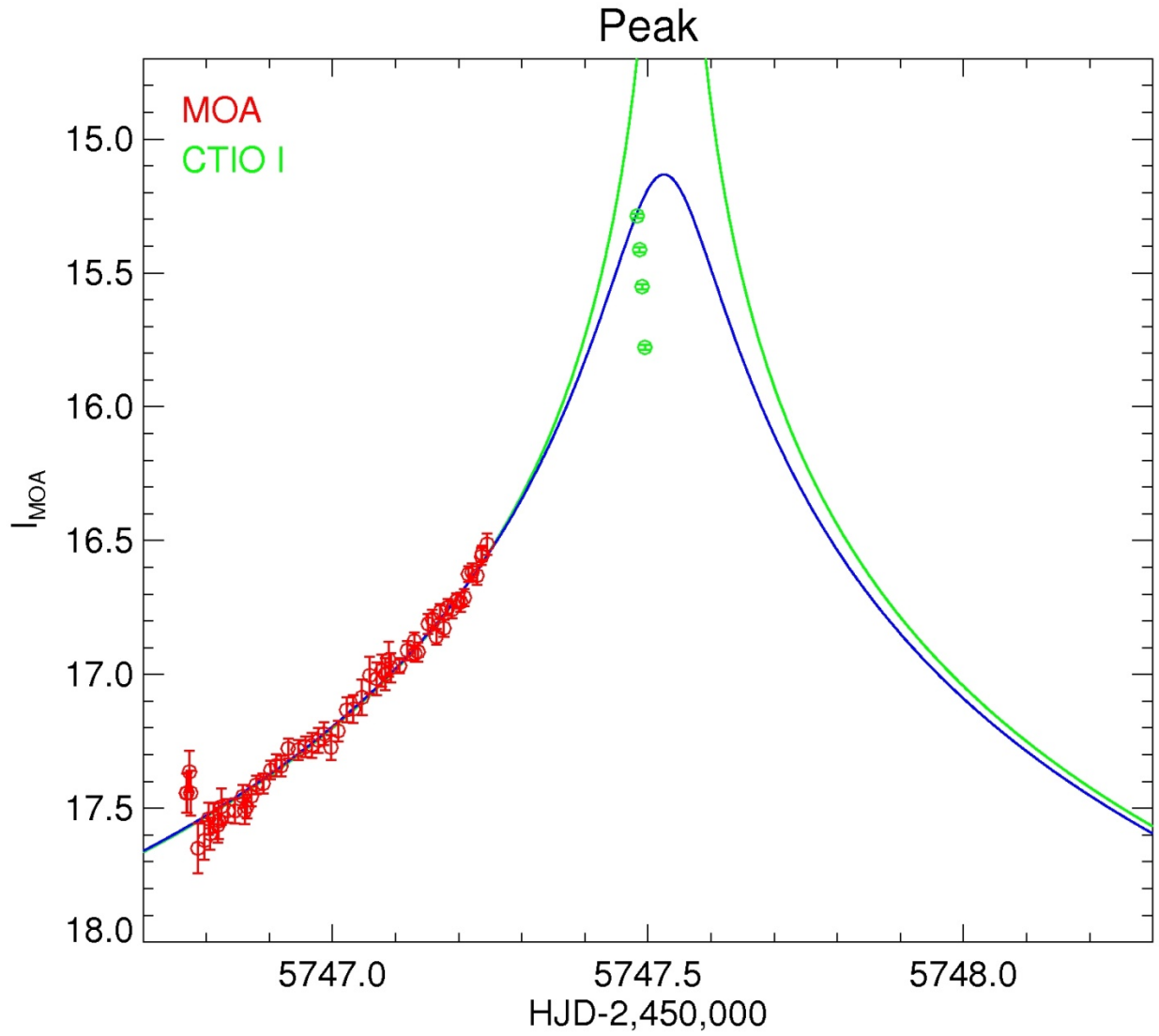
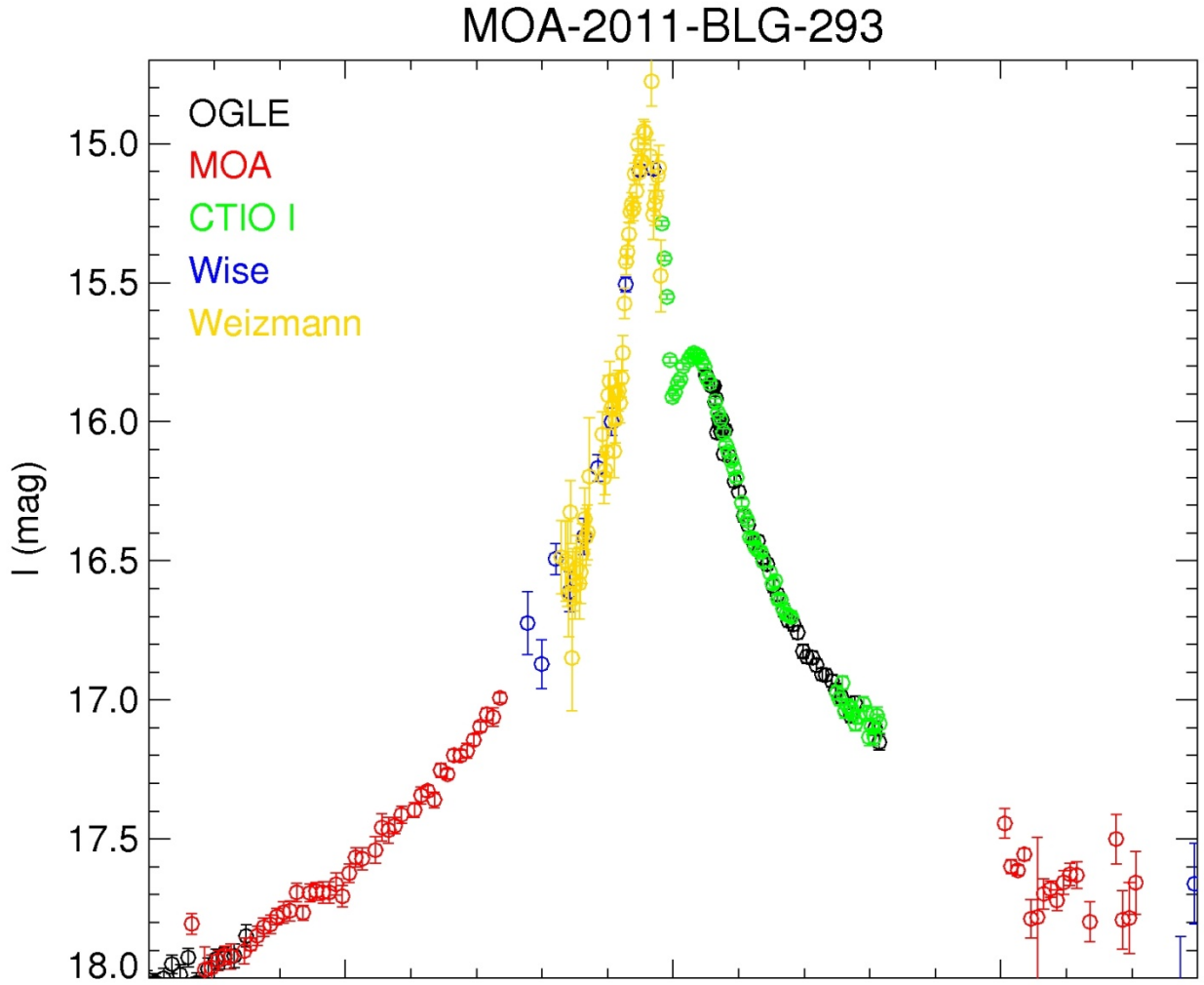
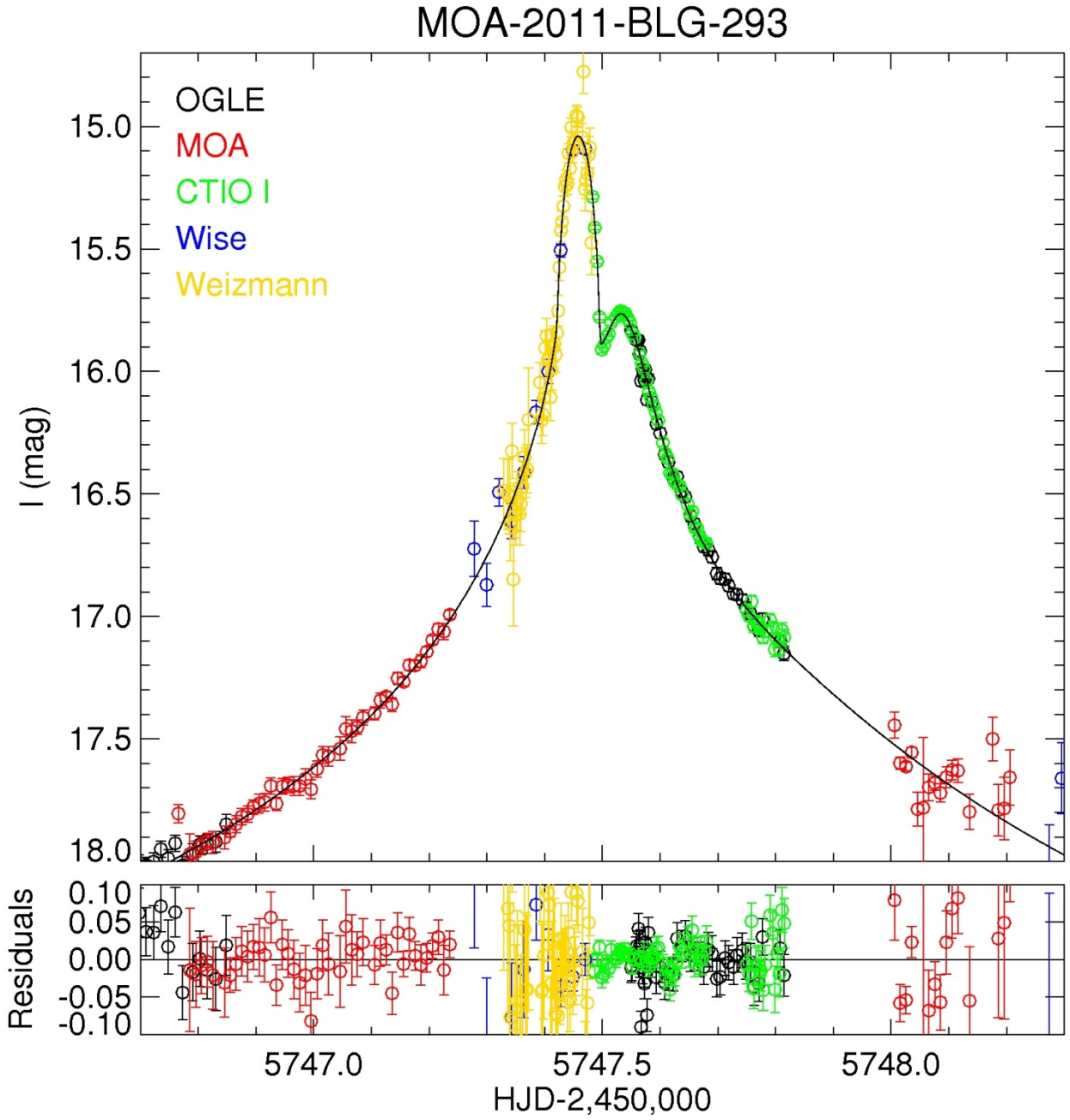
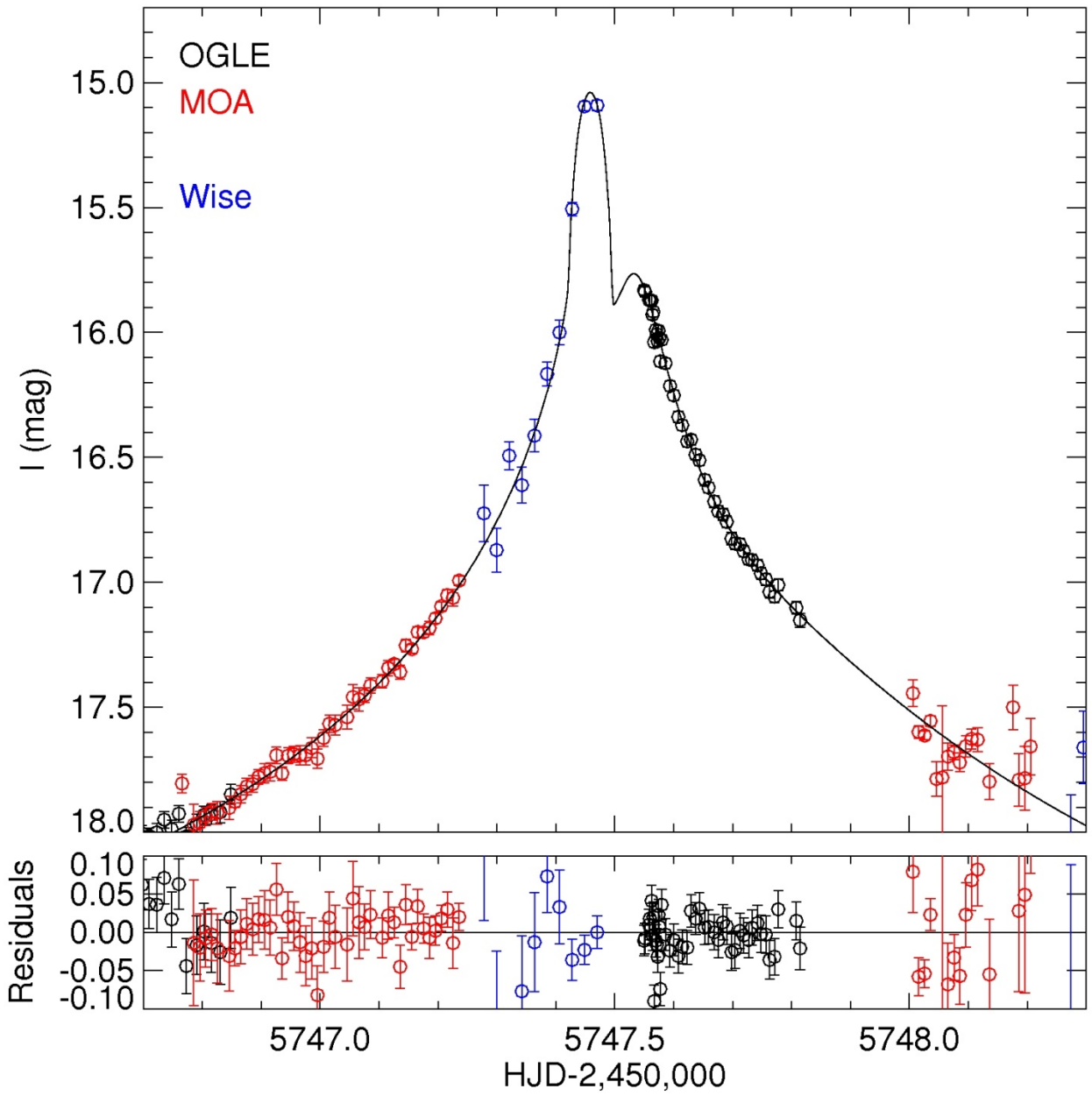

Peak
MOA
13
14
15
16
17
18
19
$I_{MOA}$
5745.0
5745.5
5746.0
5746.5
5747.0
5747.5
5748.0
HJD−2,450,000

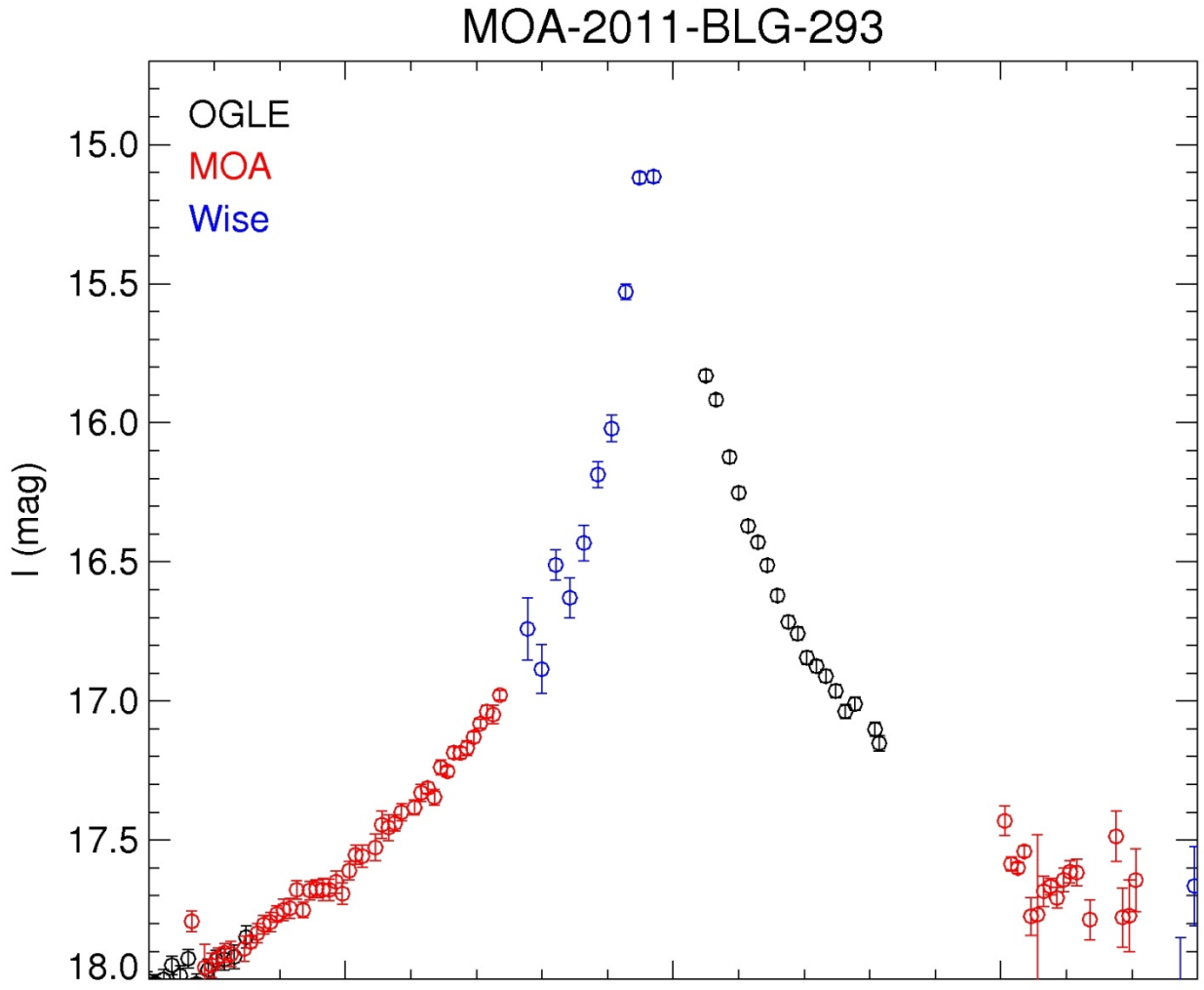

Peak
MOA
15.0
15.5
16.0
16.5
17.0
17.5
18.0
$I_{MOA}$
5747.0
5747.5
5748.0
HJD-2,450,000

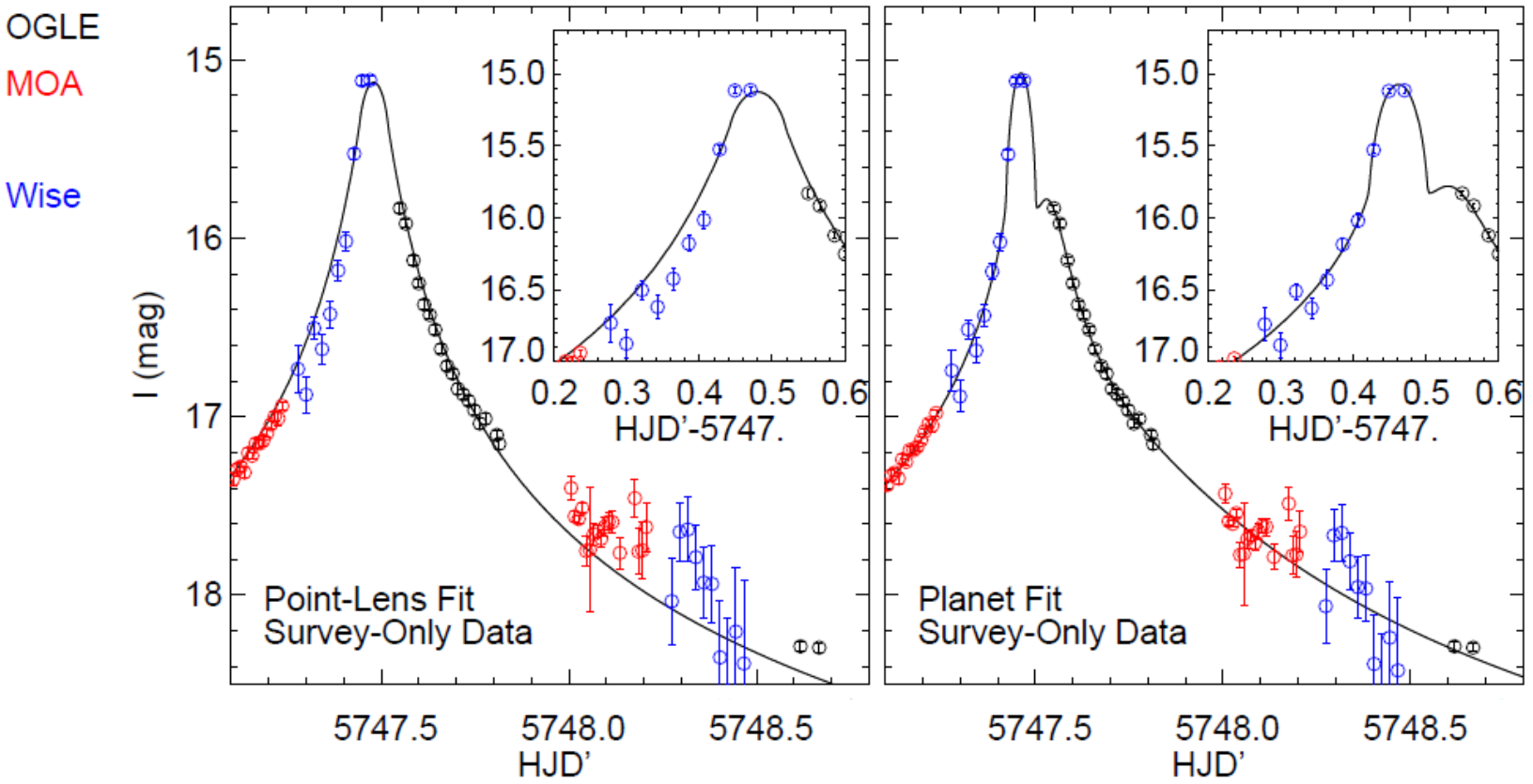

Peak
MOA
CTIO I
15.0
15.5
16.0
16.5
17.0
17.5
18.0
$I_{MOA}$
5747.0
5747.5
5748.0
HJD-2,450,000


MOA-2011-BLG-293
OGLE
MOA
CTIO I
Wise
Weizmann
I (mag)
15.0
15.5
16.0
16.5
17.0
17.5
18.0


MOA-2011-BLG-293
OGLE
MOA
CTIO I
Wise
Weizmann
I (mag)
15.0
15.5
16.0
16.5
17.0
17.5
18.0
Residuals
0.10
0.05
0.00
-0.05
-0.10
5747.0
5747.5
5748.0
HJD-2,450,000

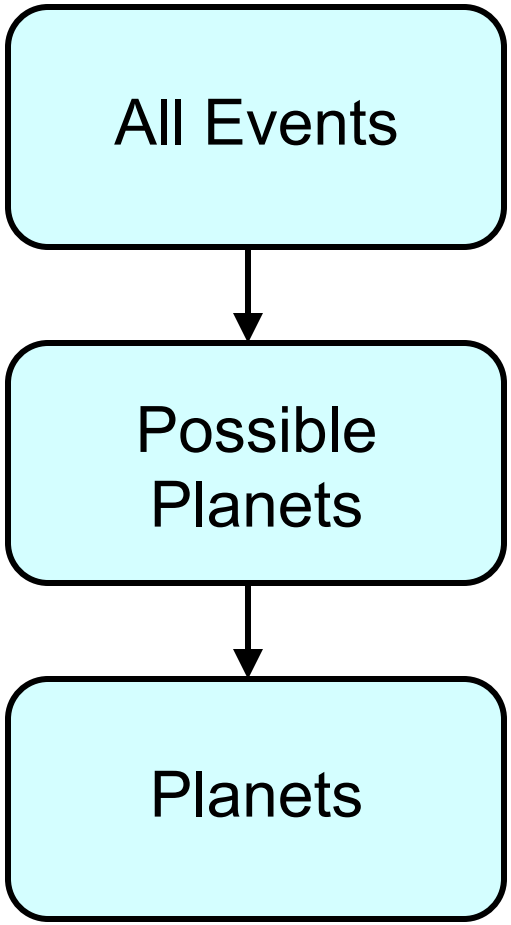

MOA-2011-BLG-293
OGLE
MOA
Wise
I (mag)
15.0
15.5
16.0
16.5
17.0
17.5
18.0
Residuals
0.10
0.05
0.00
-0.05
-0.10
5747.0
5747.5
5748.0
HJD-2,450,000


MOA-2011-BLG-293
OGLE
MOA
Wise
I (mag)
15.0
15.5
16.0
16.5
17.0
17.5
18.0

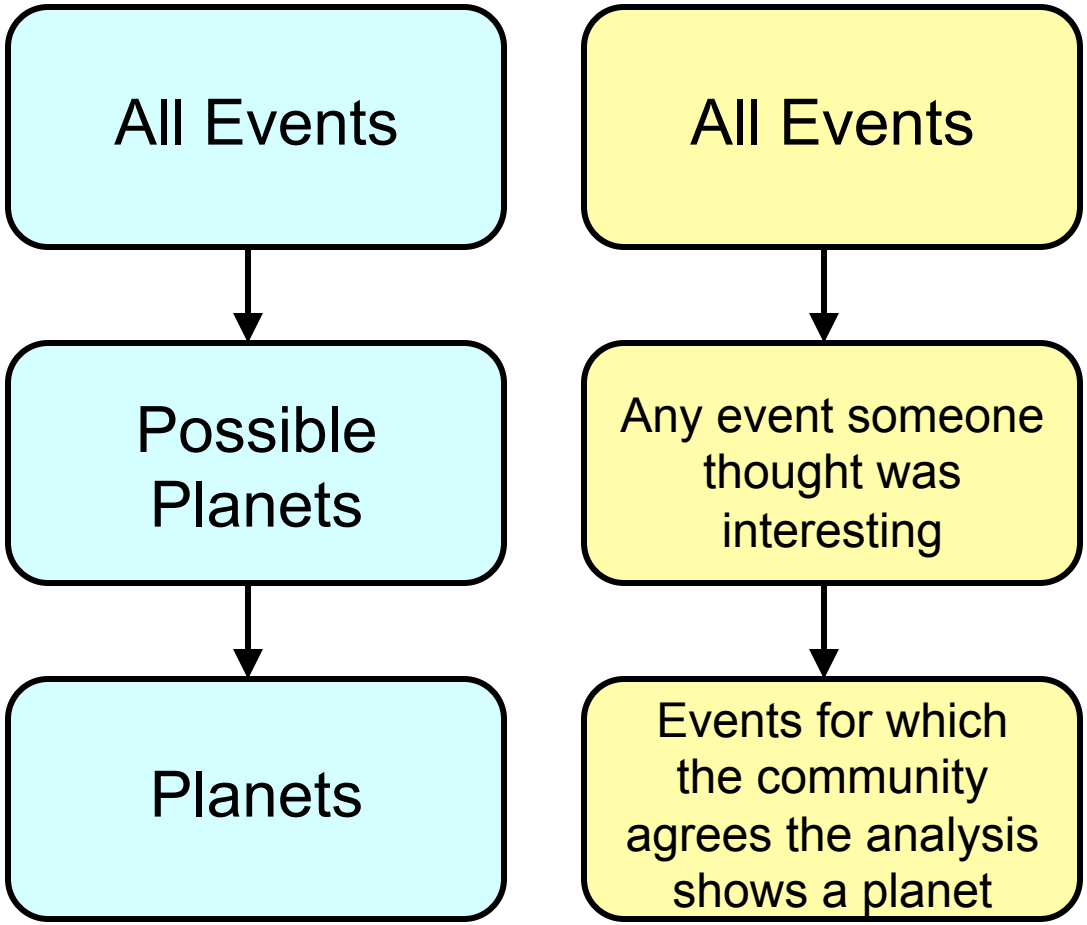

OGLE
MOA
Wise
I (mag)
15
16
17
18
15.0
15.5
16.0
16.5
17.0
0.2
0.3
0.4
0.5
0.6
HJD'-5747.
Point-Lens Fit
Survey-Only Data
Planet Fit
Survey-Only Data
5747.5
5748.0
5748.5
HJD'

# What Makes a Planet Detectable?

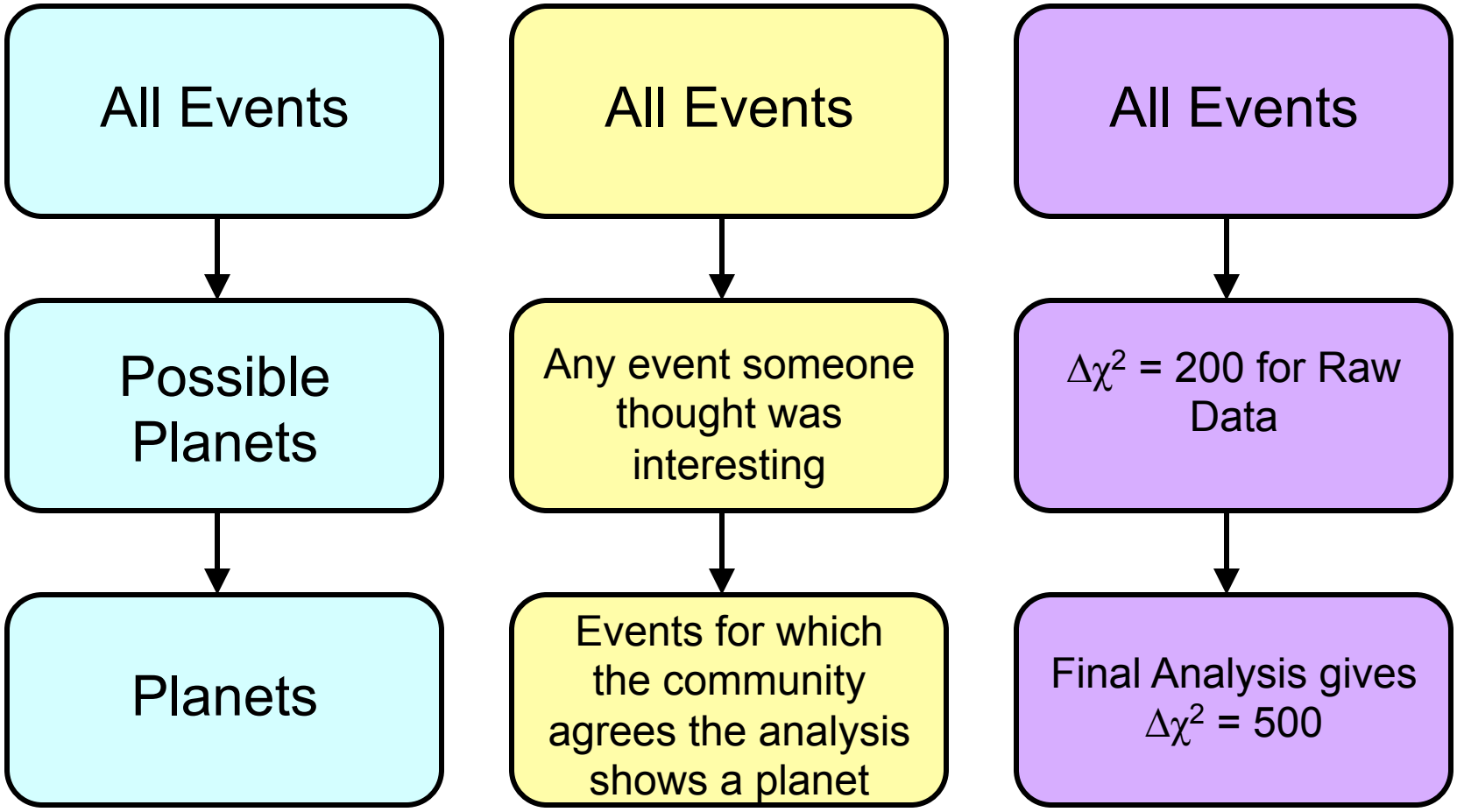
# What Makes a Planet Detectable?



# What Makes a Planet Detectable?



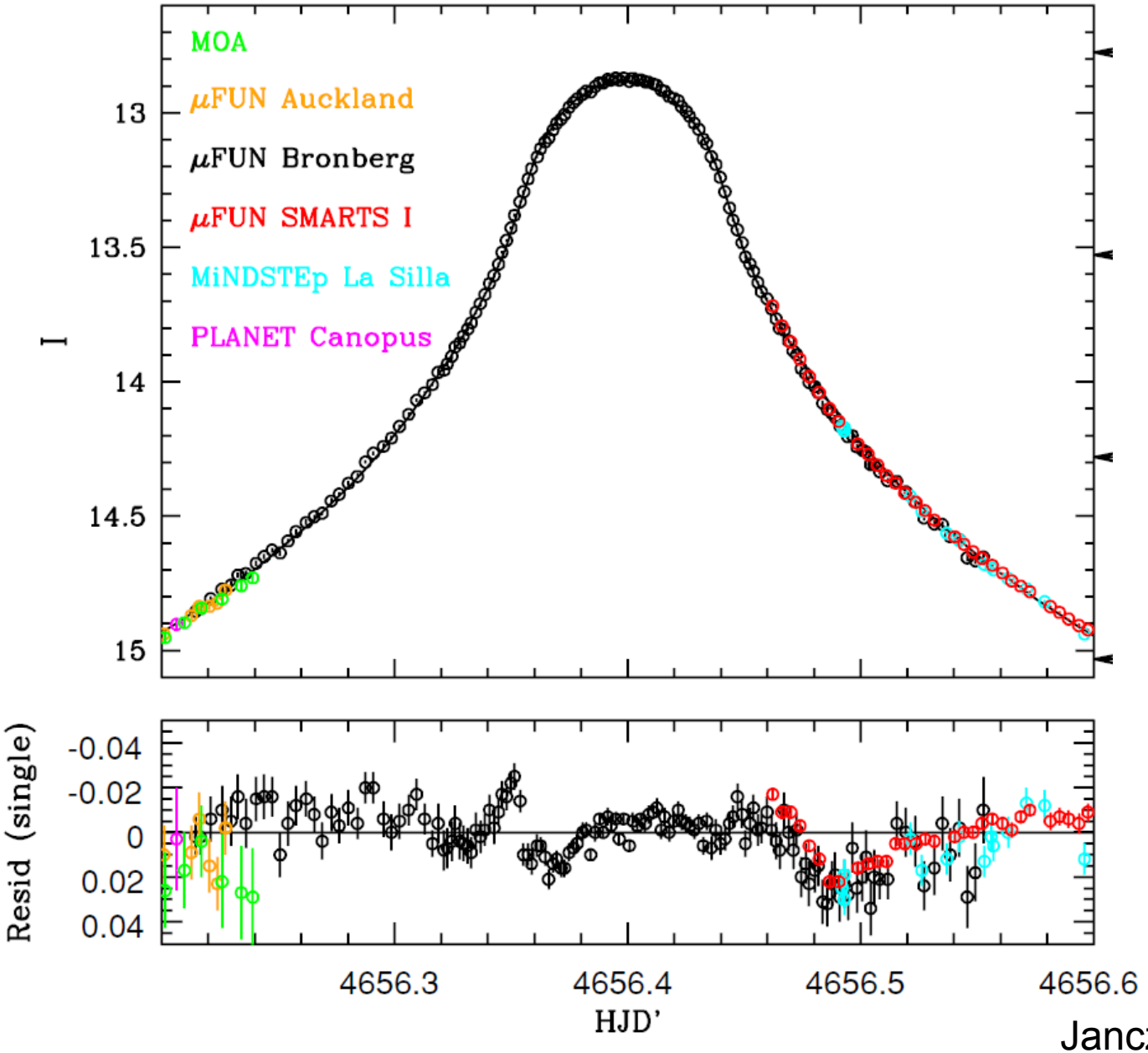
# What Makes a Planet Detectable?



# What Makes a Planet Detectable?

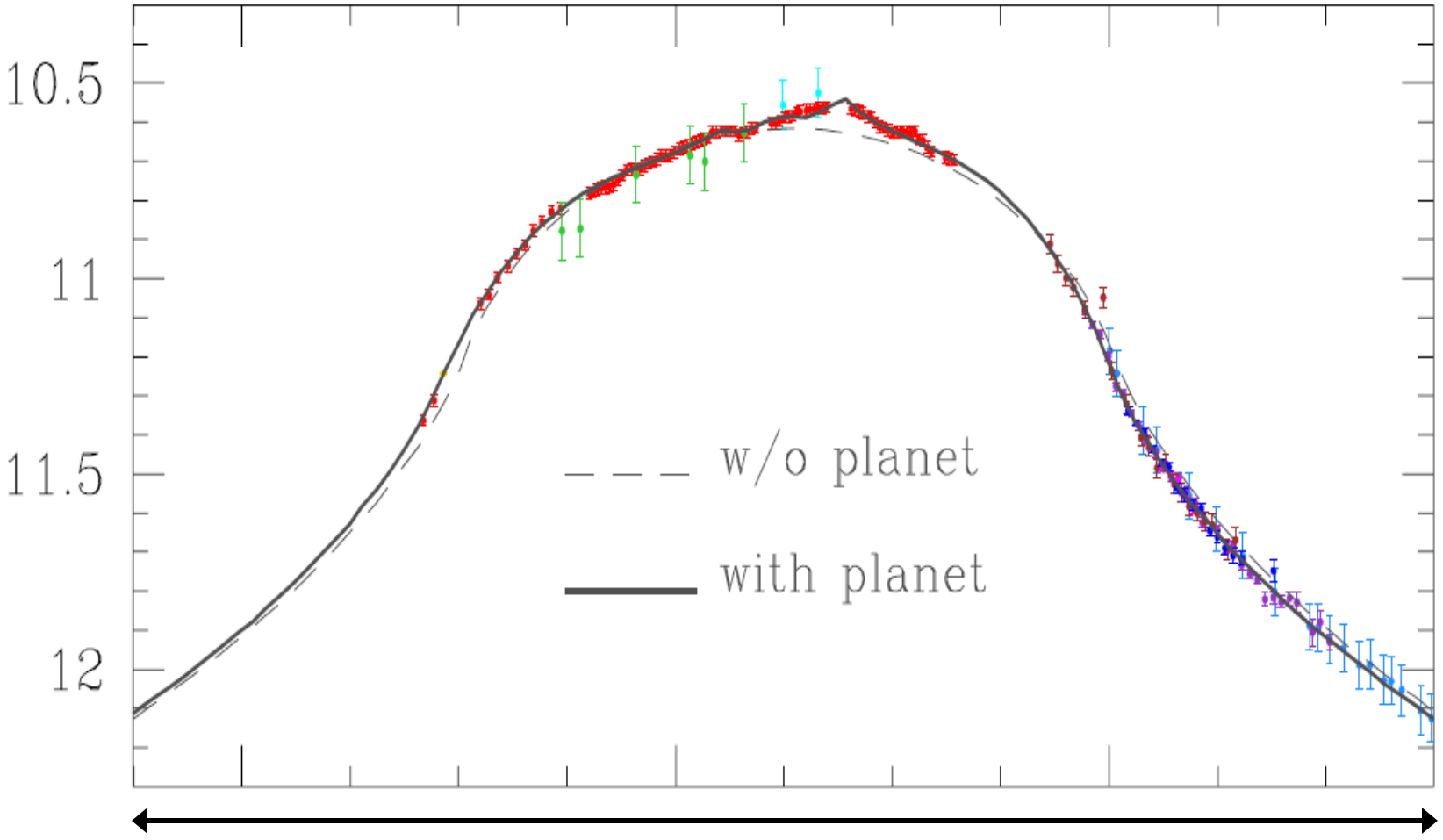
- **Can distinguish between planet and stellar mass ratios**
- **Can distinguish between microlensing and systematics**
- $\Delta\chi^2$
- Corroboration from other data
- Clear microlensing features

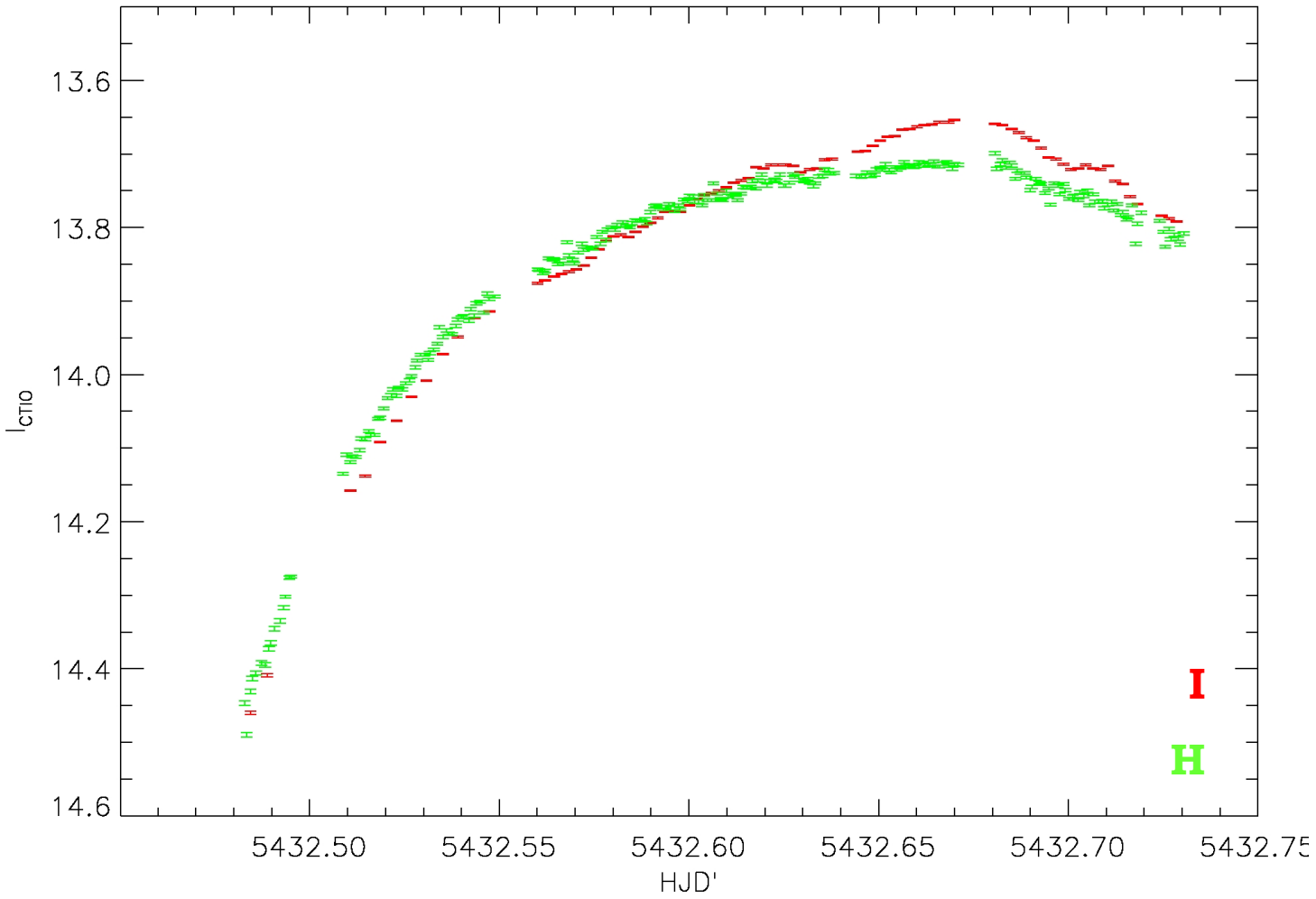
# MOA-2008-BLG-310




Janczak et al. 2010

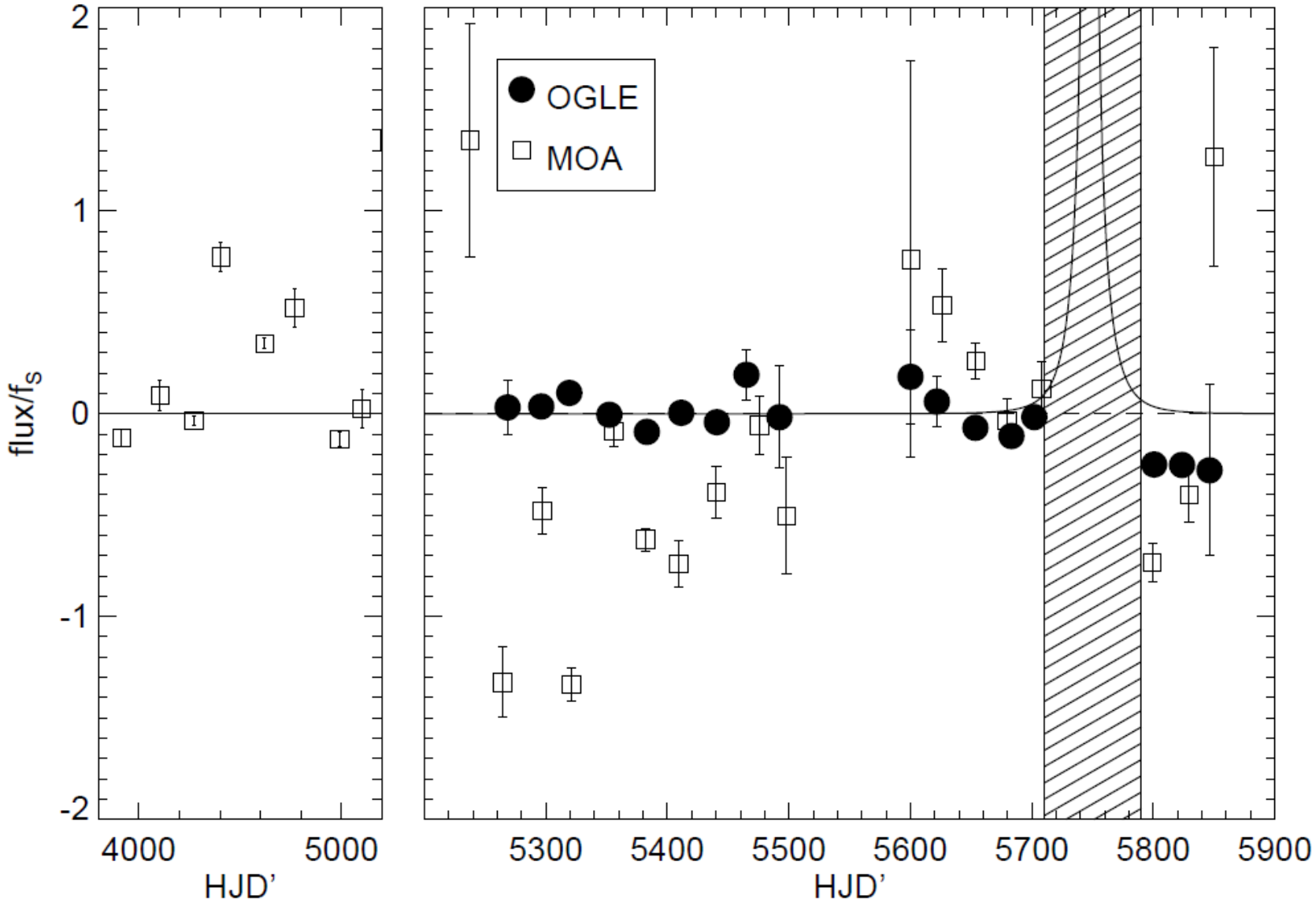
# MOA-2010-BLG-523

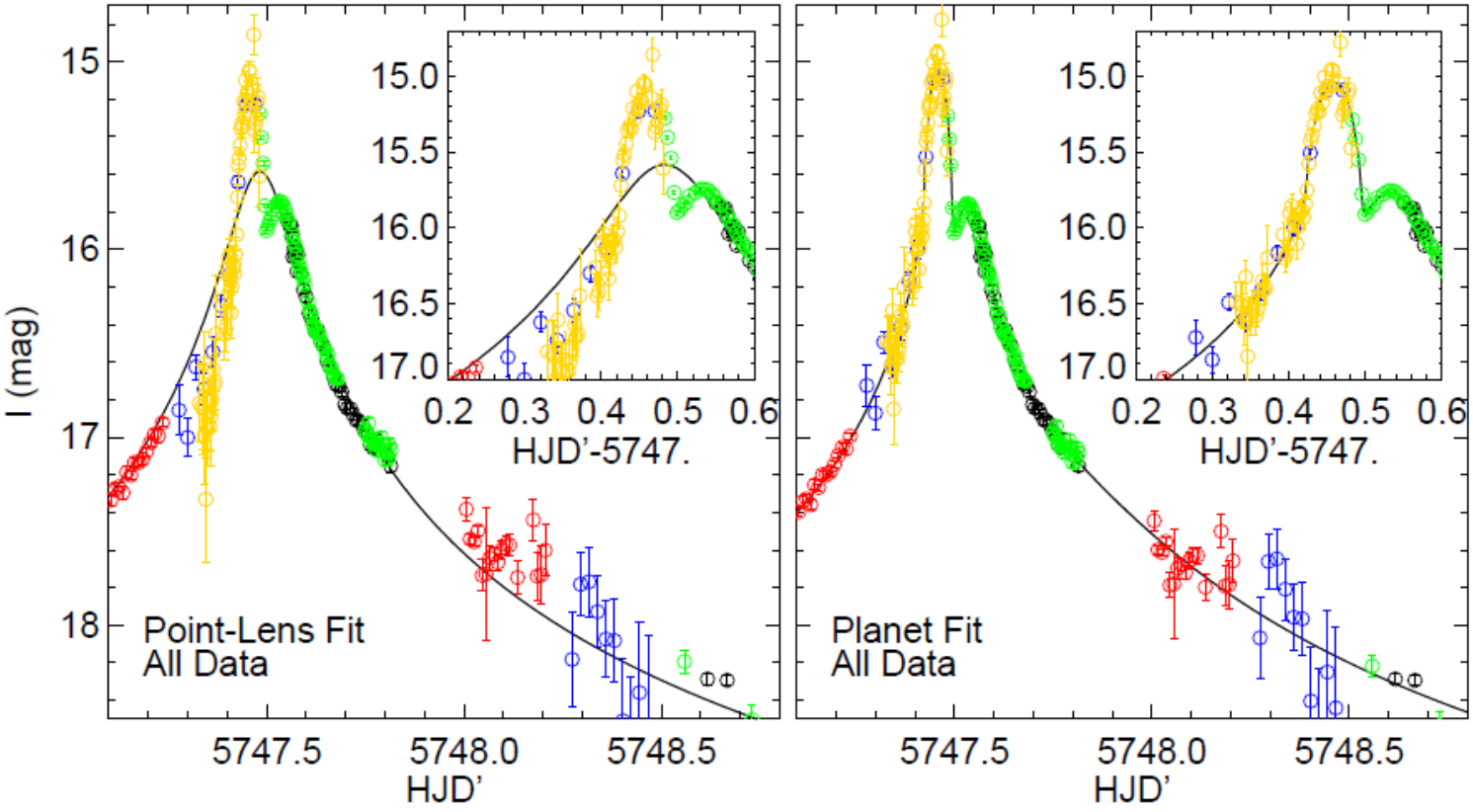


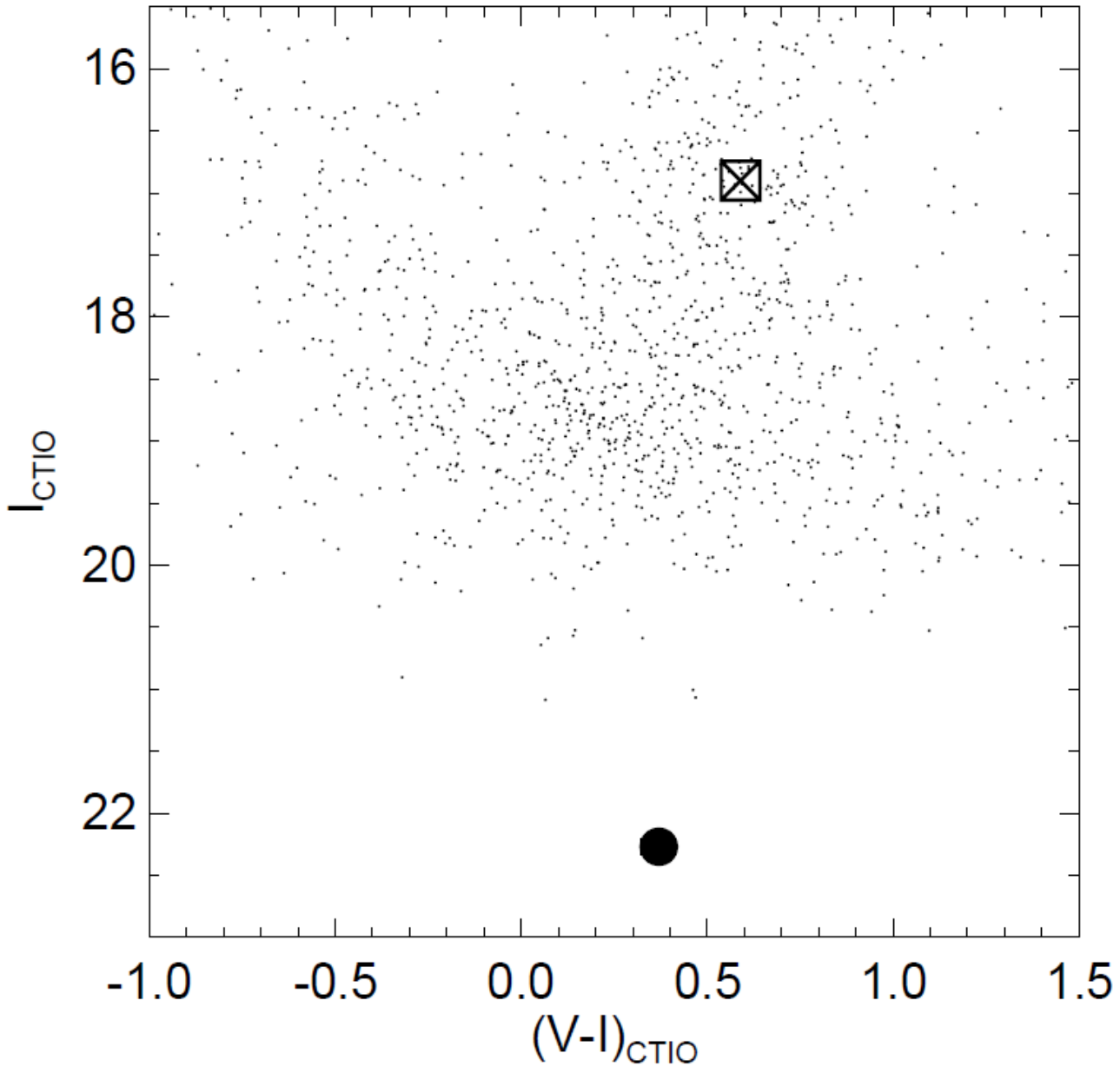

13.6
13.8
14.0
14.2
14.4
14.6
$I_{CTIO}$
5432.50
5432.55
5432.60
5432.65
5432.70
5432.75
HJD'
I
H

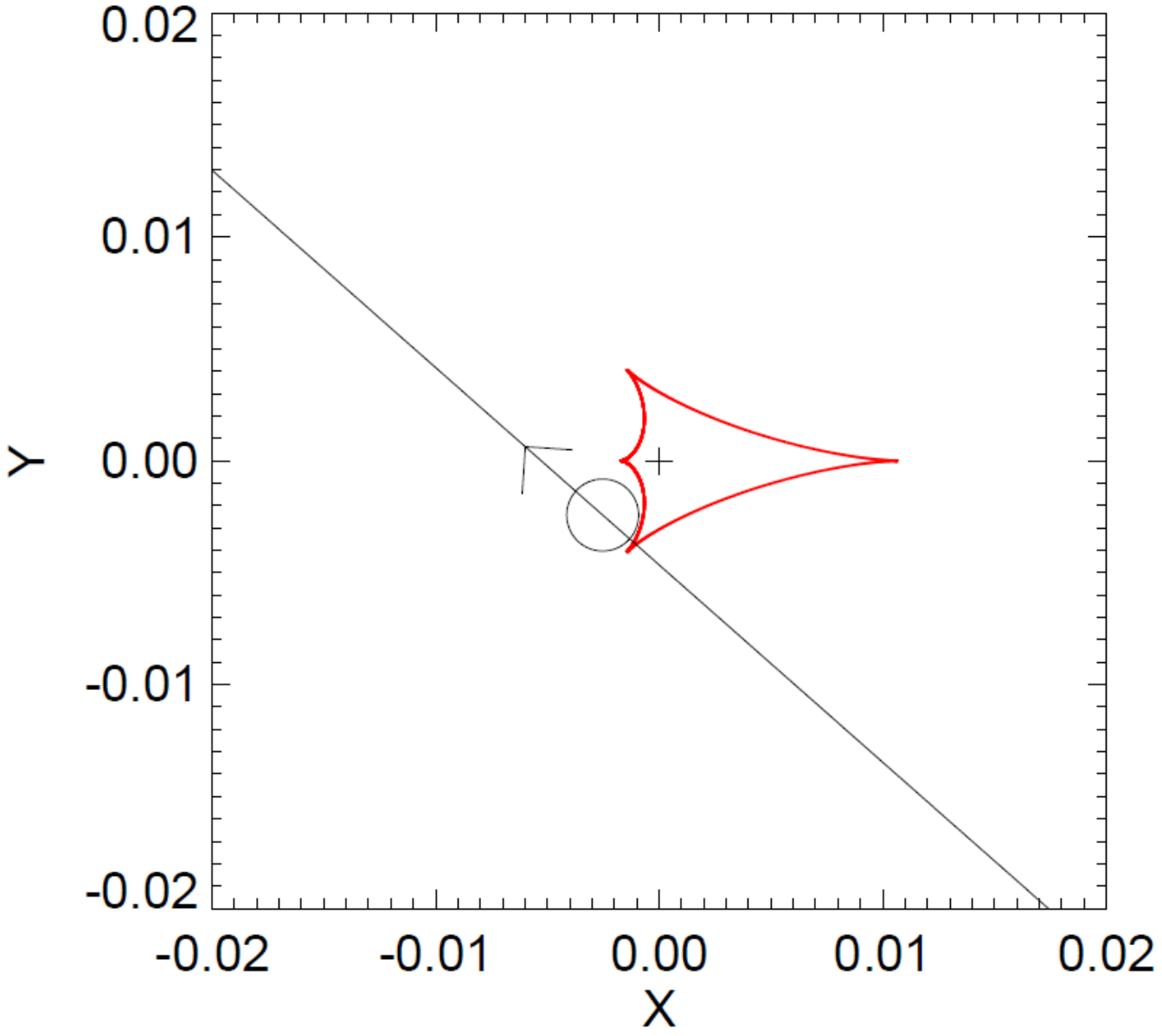
# What Makes a Planet Detectable?

- **Can distinguish between planet and stellar mass ratios**
- **Can distinguish between microlensing and systematics**
- $\Delta\chi^2$
- Corroboration from other data
- Clear microlensing features
- Other statistics


OGLE
MOA
flux/f_s
HJD'
HJD'
2
1
0
-1
-2
4000
5000
5300
5400
5500
5600
5700
5800
5900


I (mag)
15
16
17
18
15.0
15.5
16.0
16.5
17.0
0.2
0.3
0.4
0.5
0.6
HJD'-5747.
Point-Lens Fit
All Data
5747.5
5748.0
5748.5
HJD'
Planet Fit
All Data


16
18
20
22
$I_{CTIO}$
-1.0
-0.5
0.0
0.5
1.0
1.5
$(V-I)_{CTIO}$


0.02
0.01
0.00
-0.01
-0.02
Y
-0.02
-0.01
0.00
0.01
0.02
X