

KMTNet Microlensing Experiment: current status and future plans

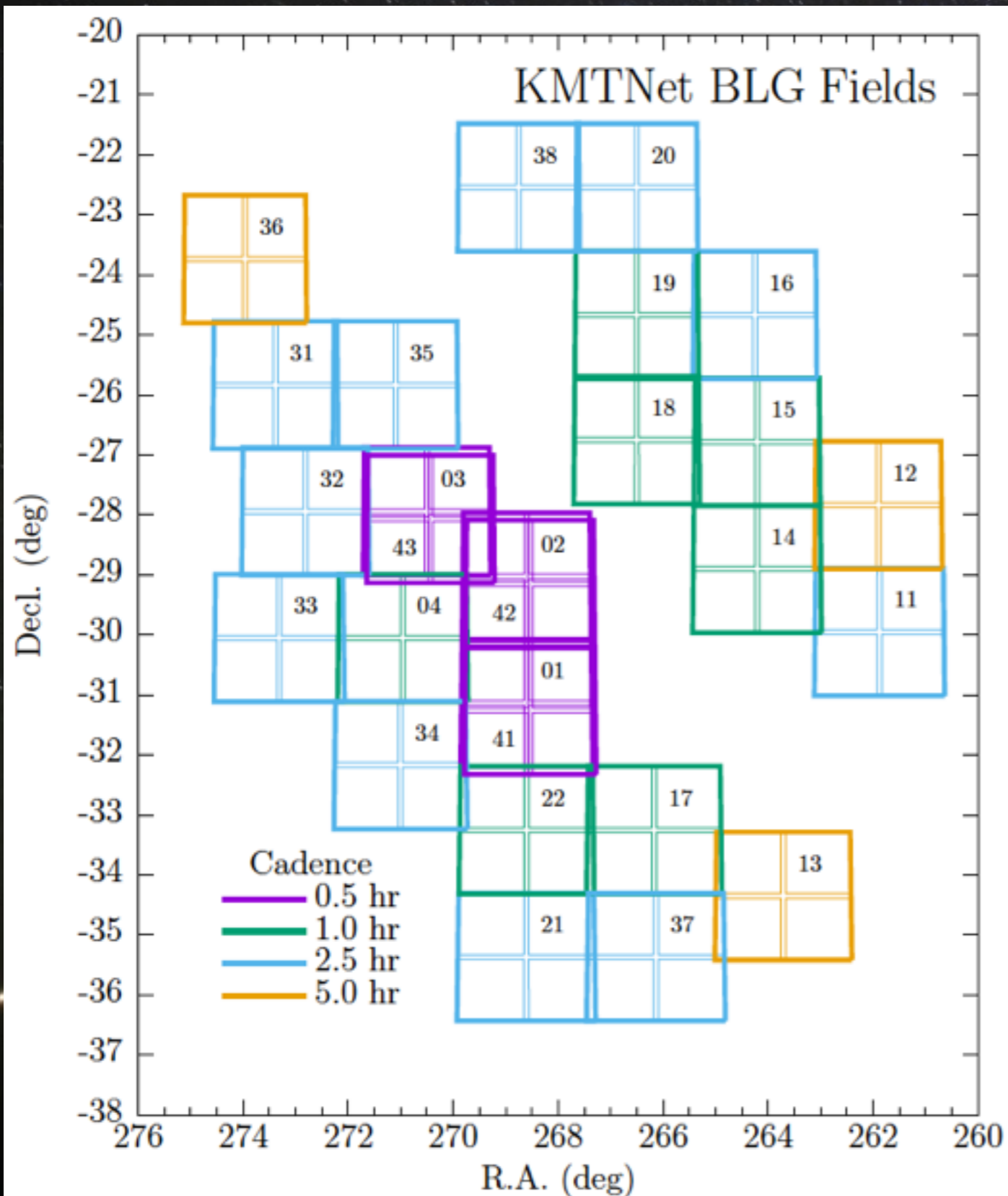
Sun-Ju Chung (KASI)

&

KMTNet Team

2018. 1. 25

Observational Fields



from 2016

total : 27 fields

3x2 main fields

+

21 outer fields

Pipeline

- **DIA photometry**
 - all 2016/2017 data finished
 - **Delta_flux light curves**

Event-Finder

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step 2 : eye check

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(only KMTNet events : 177)
 - data release (kmtnet.kasi.re.kr/~ulens/event/2015)
 - Event-Finder paper (Kim et al. AJ, 2018, in press)

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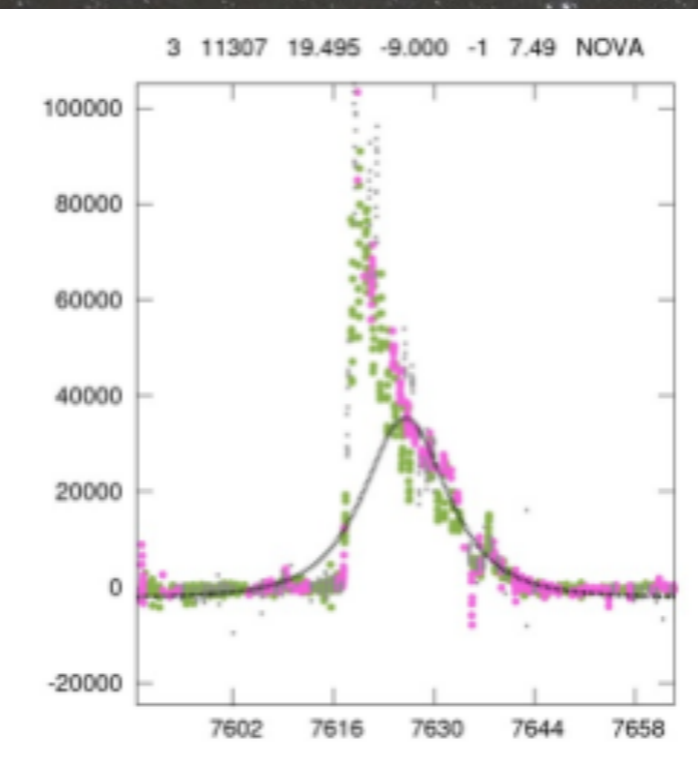
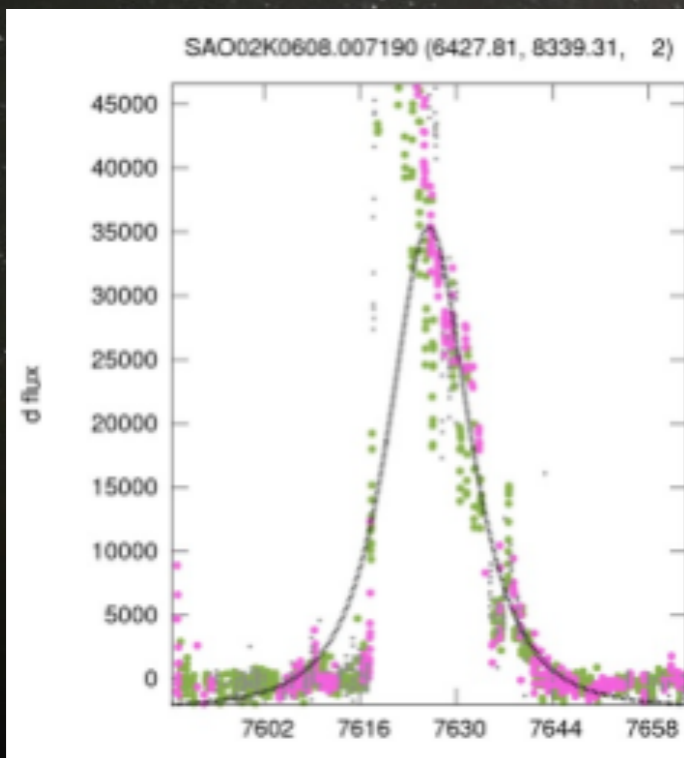
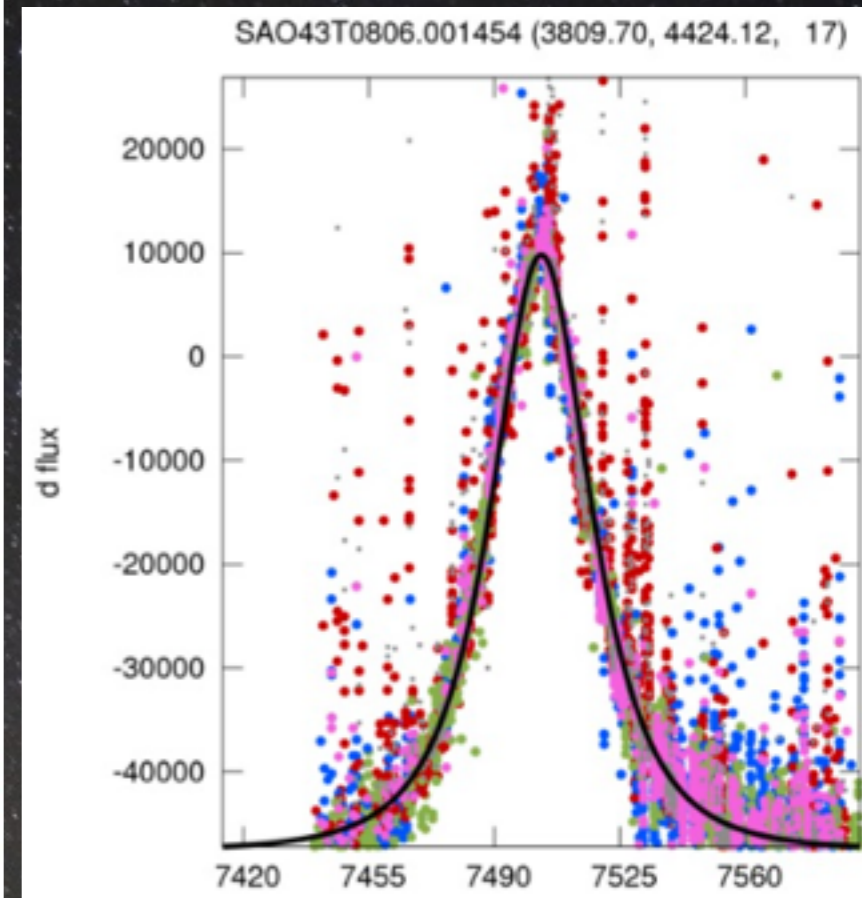
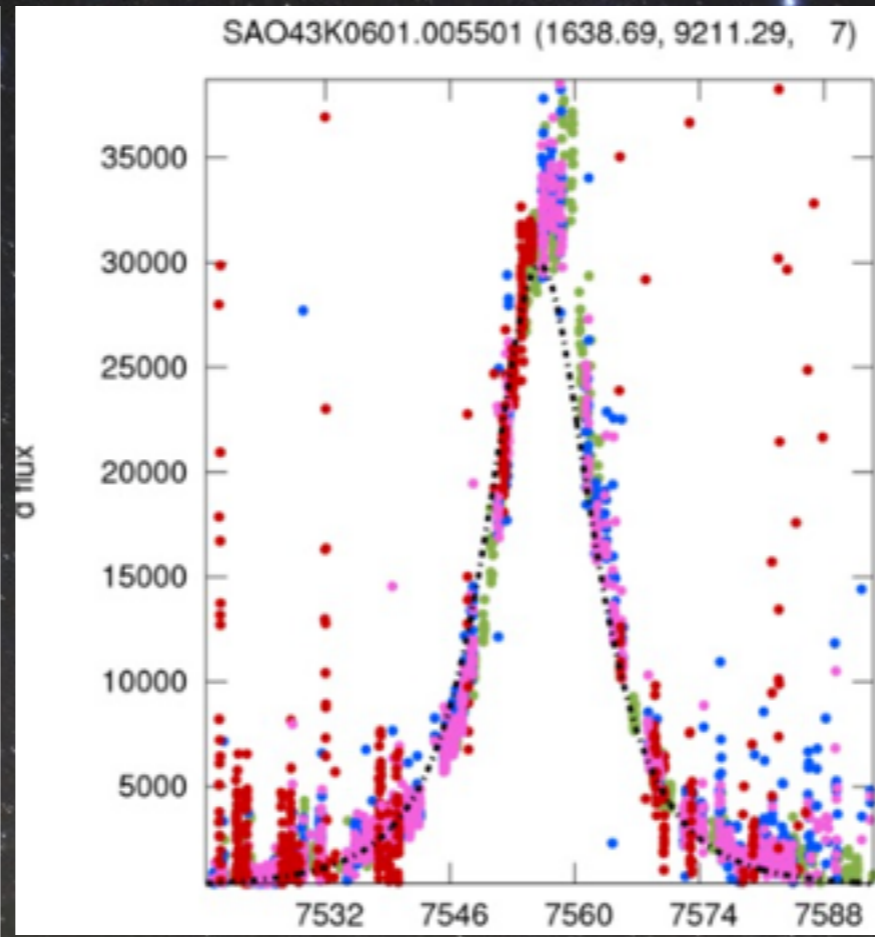
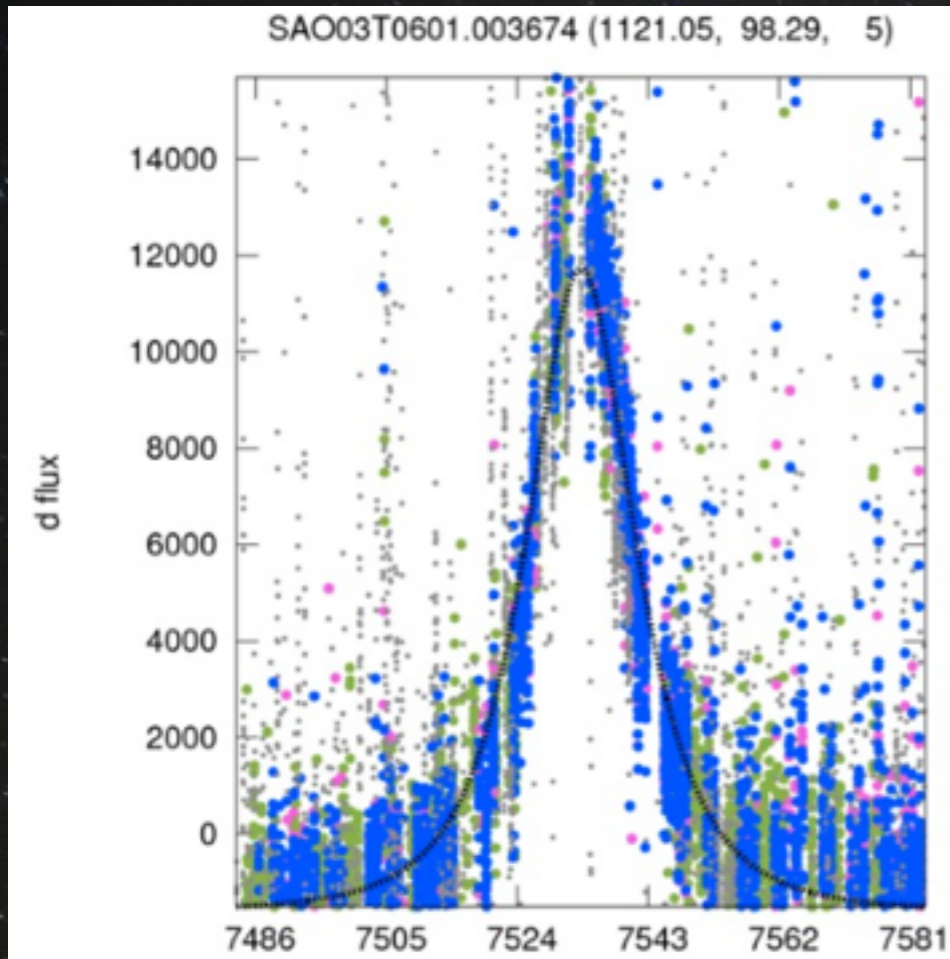
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 - step 2 : **2597 events - (clear 2065 + possible 532)**
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 - step 1 : 564,010 candidates (27 fields)
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 - ➔ detection efficiency : 0.5%
- **2017 :**
 - step 1-1 : 583,525 candidate (27 fields)
 - step 1-2 : automatic variable/artifact elimination
 - ⇒ **214,438 candidates (decreased by 37%)**
 - step 2 : **2355 events (clear 2040 + possible 315)**
 - ➔ detection efficiency : 1.1%

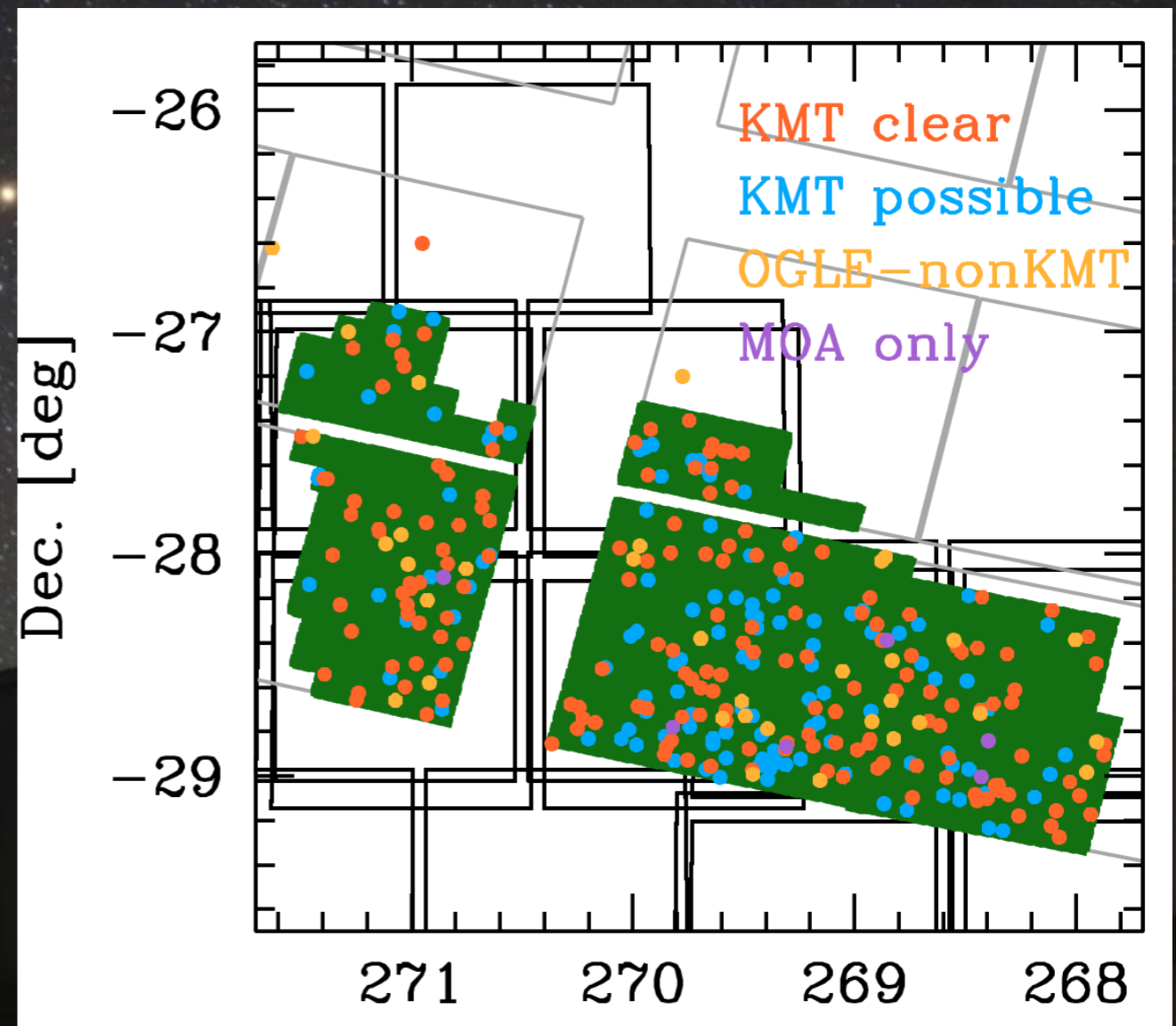
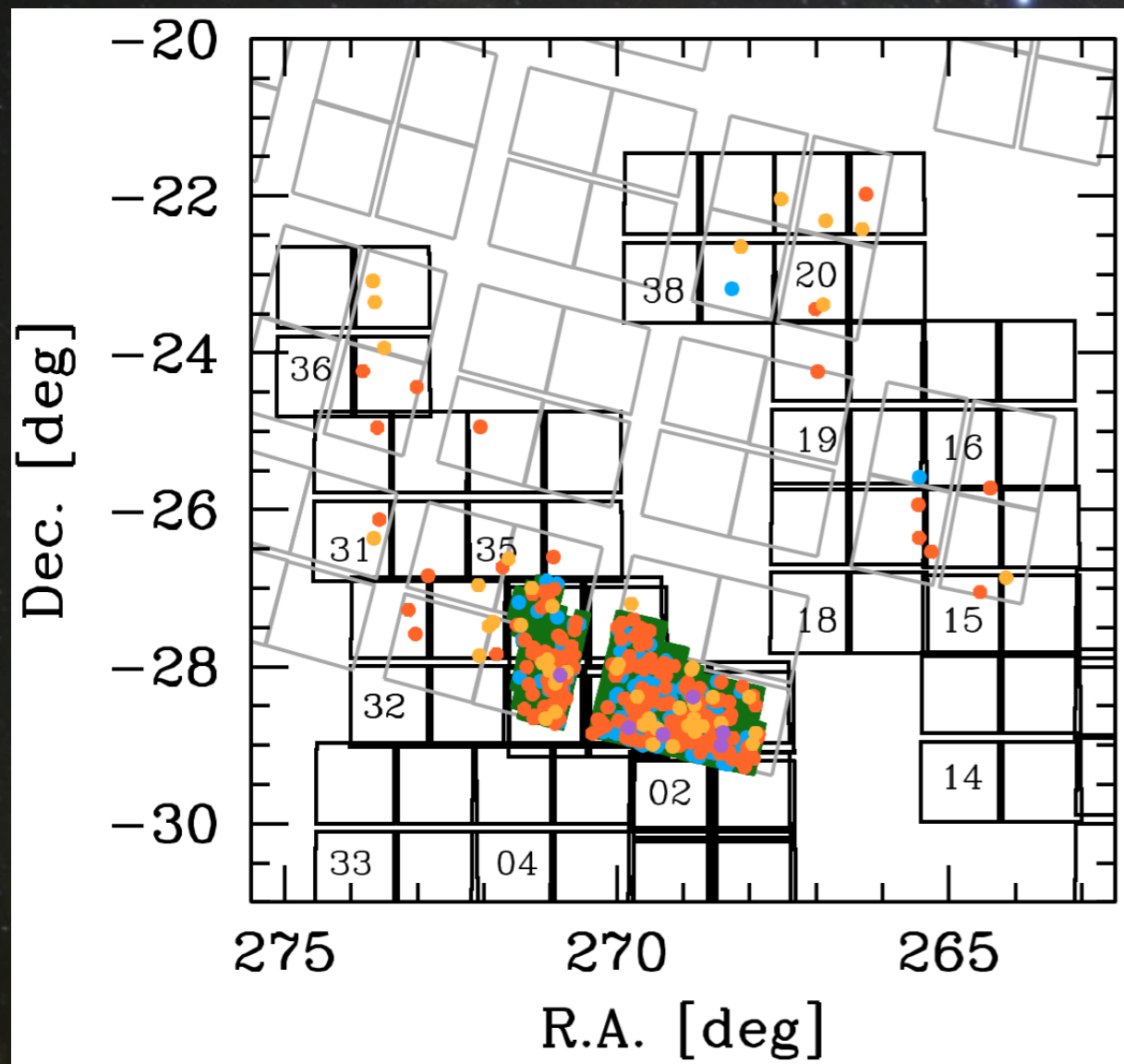
microlensing candidates



CV candidates

KMTNet-K2C9 fields

overlapping fields : KMTNet BLG02 & BLG03



265 events (clear 181 + possible 84) found!

KMTNet-K2C9 fields

overlapping fields : KMTNet BLG02 & BLG03

All KMTNet-K2C9 events :
data release
(DIA & PySIS)

kmtnet.kasi.re.kr/~ulens/event/2016k2/

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 - possible to do (quasi) real-time photometry
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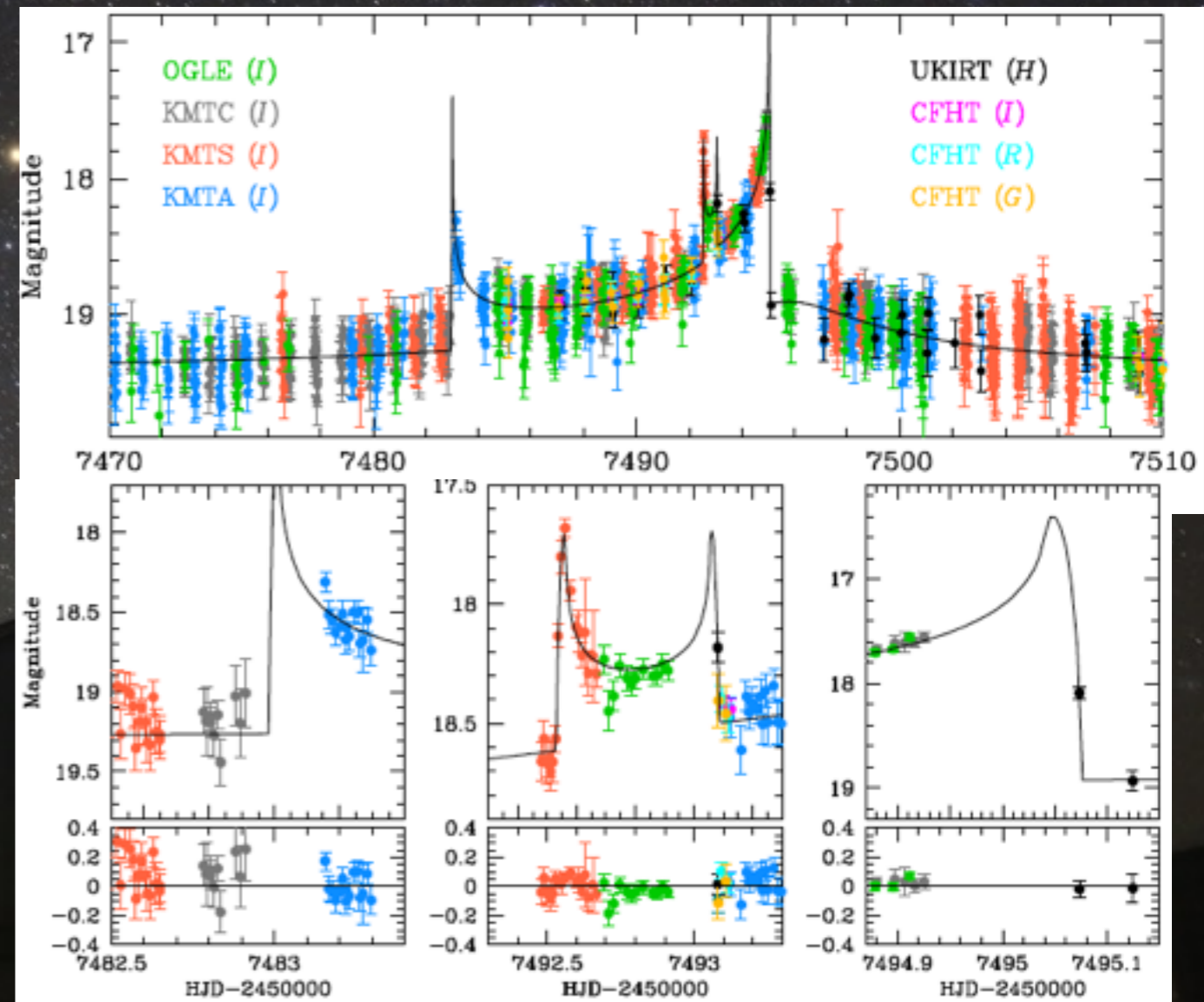
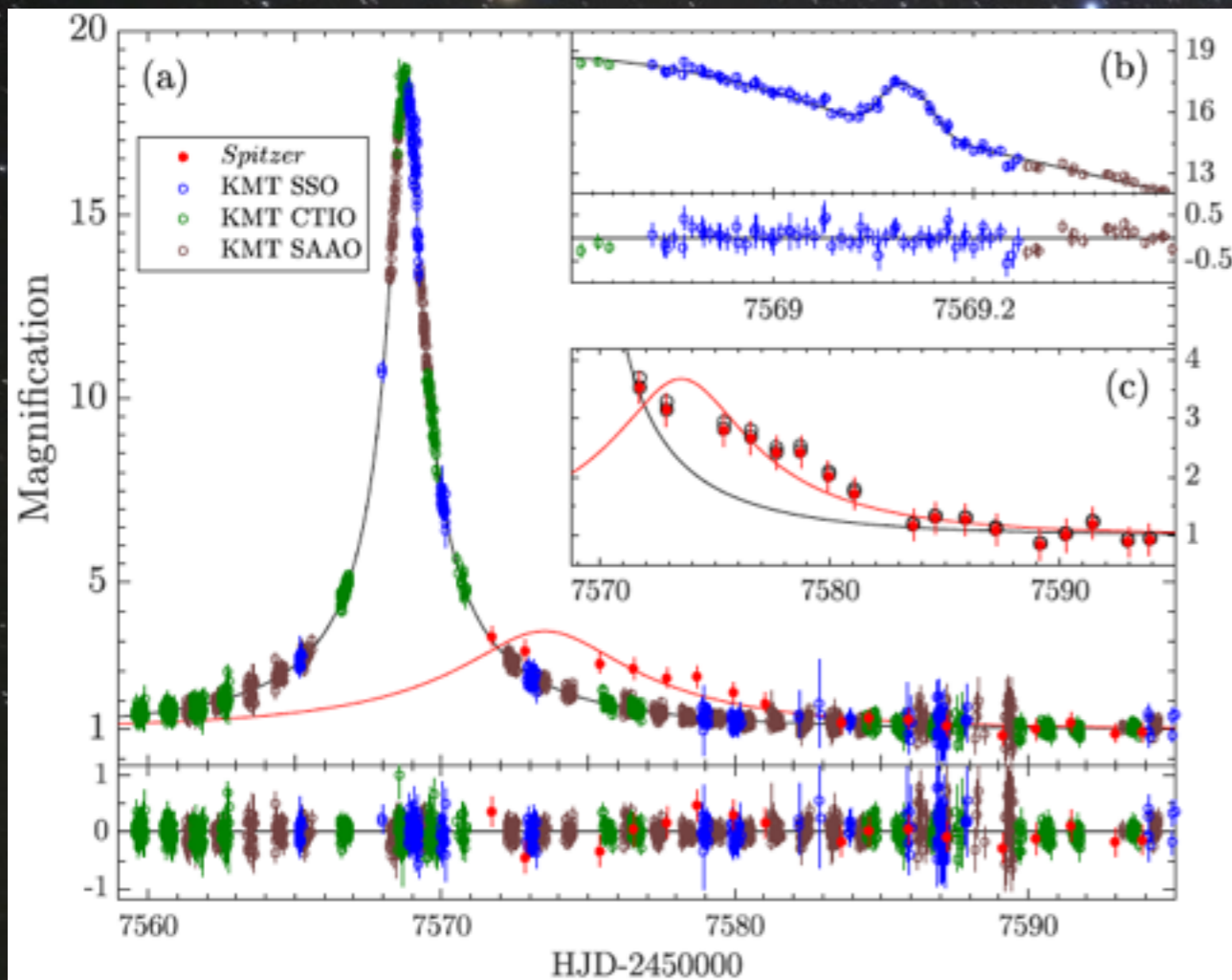
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- **2016 : data release w/ PySIS summer 2018 ?**
- **2017 : data release “as soon as possible”**

High-Cadence KMTNet samples

OGLE-2016-BLG-1195 (Shvartzvald+, ApJ, 2017)

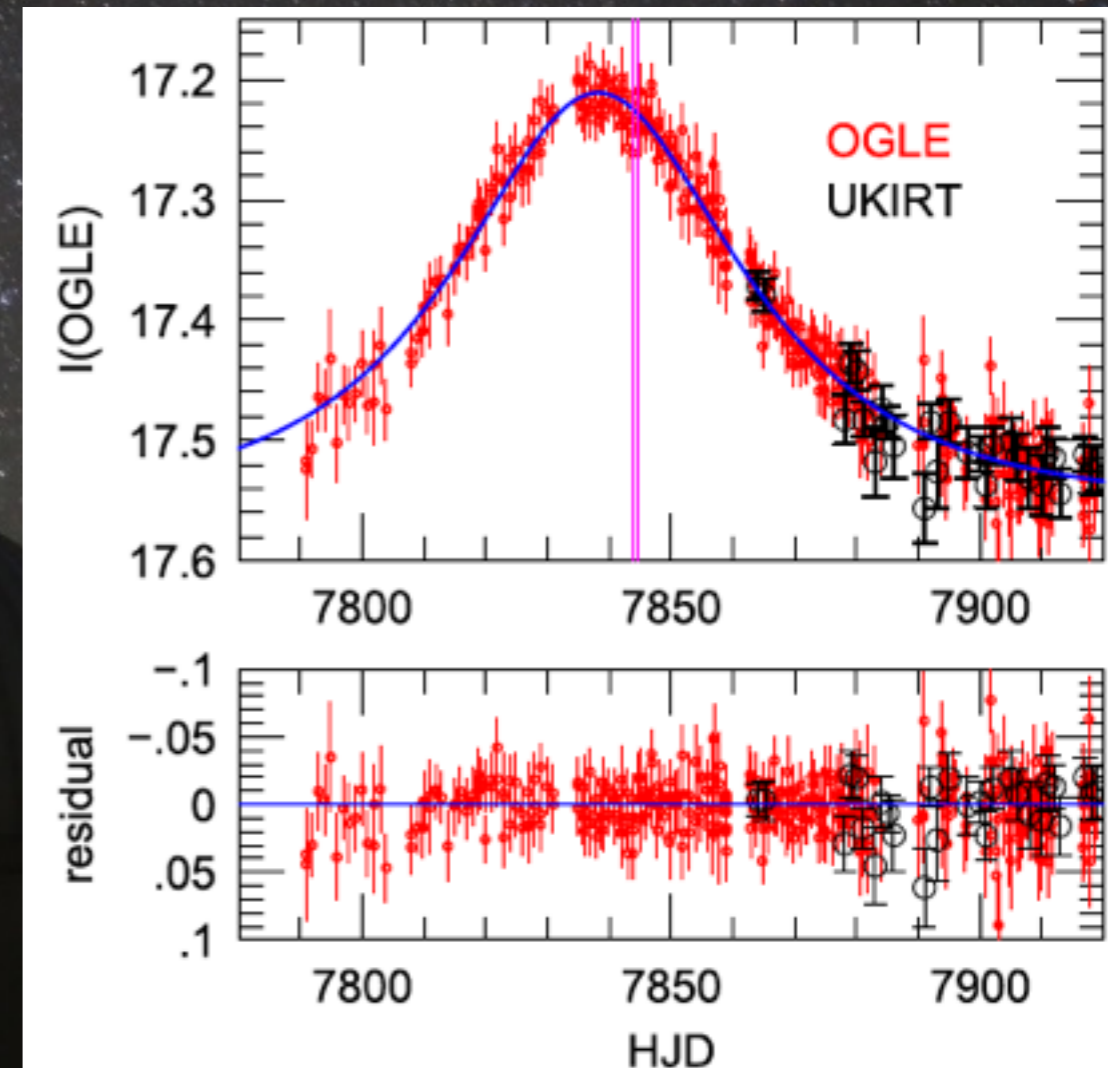
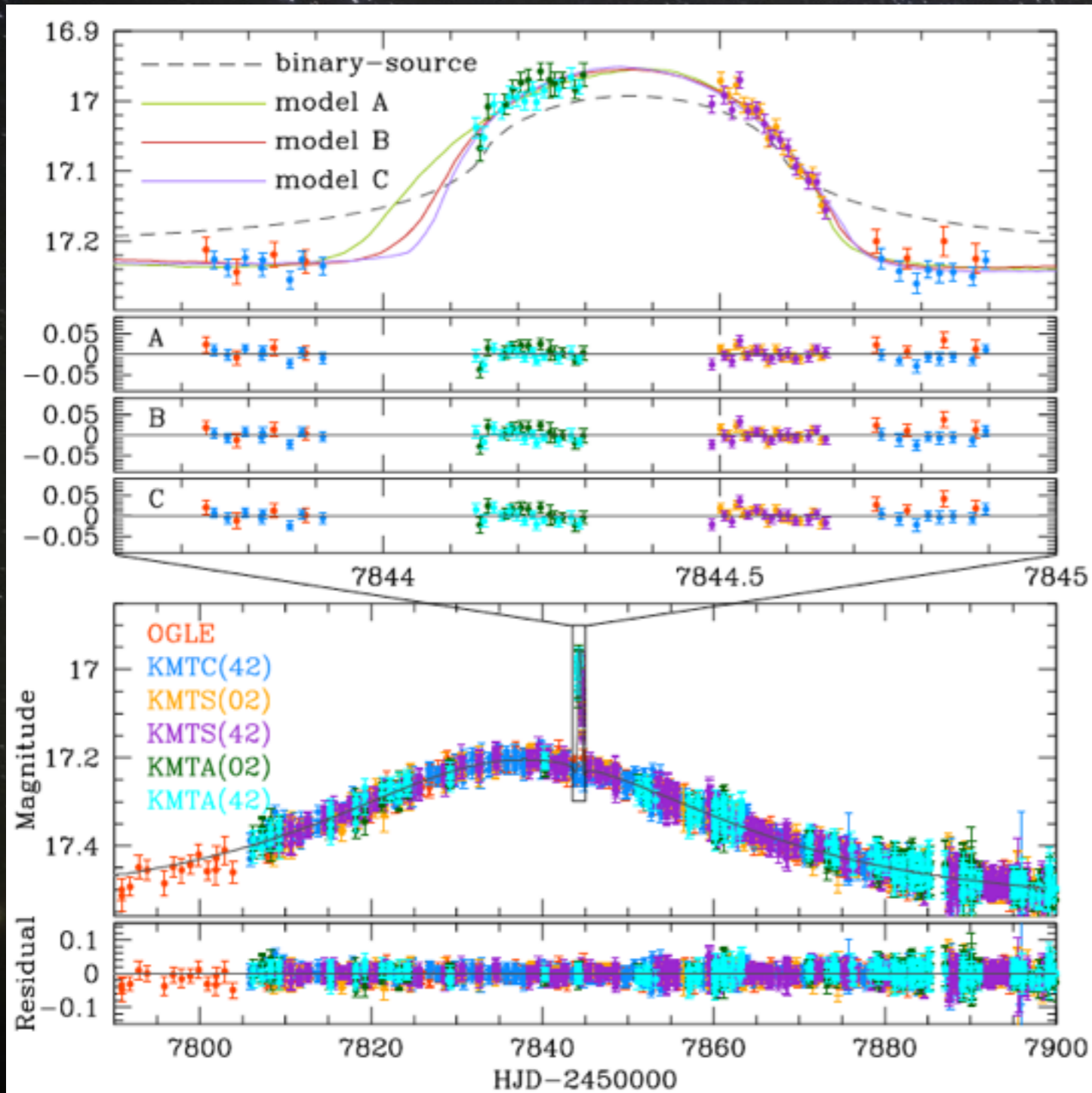


OGLE-2016-BLG-0613 (Han et al, AJ, 2017)

OGLE-2017-BLG-0173 (Hwang+, AJ, 2018)

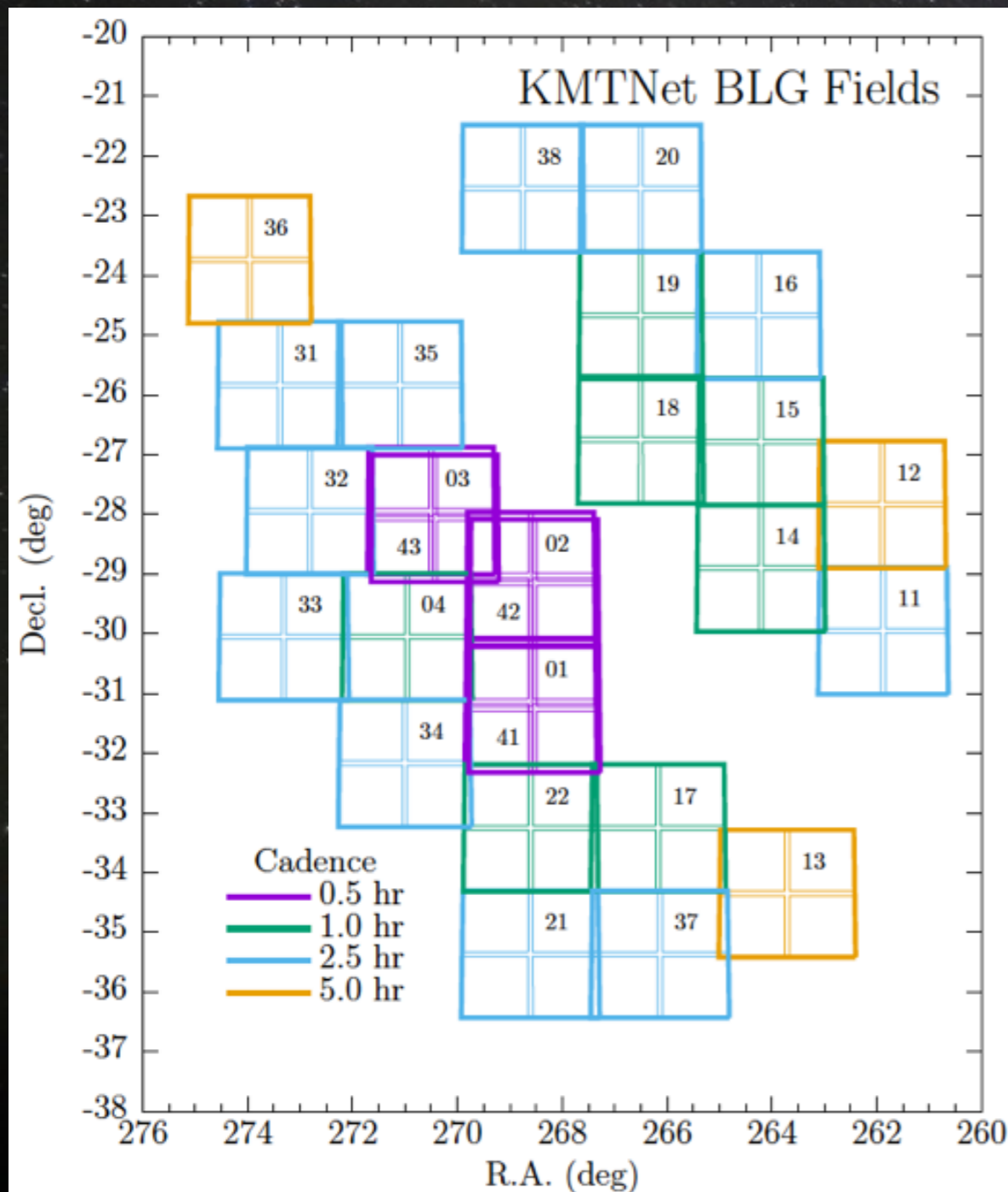
$$M_{\text{host}} = 0.4M_{\odot}$$

$$M_p = 3.3M_E \text{ or } 8M_E$$



Collaboration with Spitzer

Close cooperation with Spitzer from 2015



- KMTNet covers Spitzer fields

58 microlens parallaxes measured

- 2016-2017 Spitzer season : concentrates on Spitzer targets

Data Policy (2015)

KMTNet Event-Finder paper (Kim et al, AJ, in press, 2018)

1. All 2015 data remain proprietary until 8 papers (including Event-Finder) accepted (priority period) - **priority period ended Dec 15**
2. During the priority period, anyone can write a paper using the KMTNet data, but they cannot be submitted for publication (including arXiv).
3. Welcome collaboration with the KMTNet team, but co-authorships not required.
4. Co-authorships required only in cases that the additional data processing (re-reduction data) are needed.
5. For OGLE/MOA events, it is required their permission to use KMTNet data (except only-KMTNet events).

Data Policy : K2

- Full immediate access to KMTNet events
 - No “wait time” for acceptance
- Strongly encourage KMTNet co-authorship
- Permission from OGLE/MOA required for K2-nonKMT events

Data Policy (2016+2017)

- Same as 2015

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- Real-time DIA photometry from 2018
- Measure the event detection efficiency of KMTNet by injecting fake events (image level) into the pipeline
- Improve Event-Finder algorithm using by machine-learning method
- Improve the automated PySIS pipeline for the 2018 Spitzer season