突発天体探査

冨永望

(国立天文台)

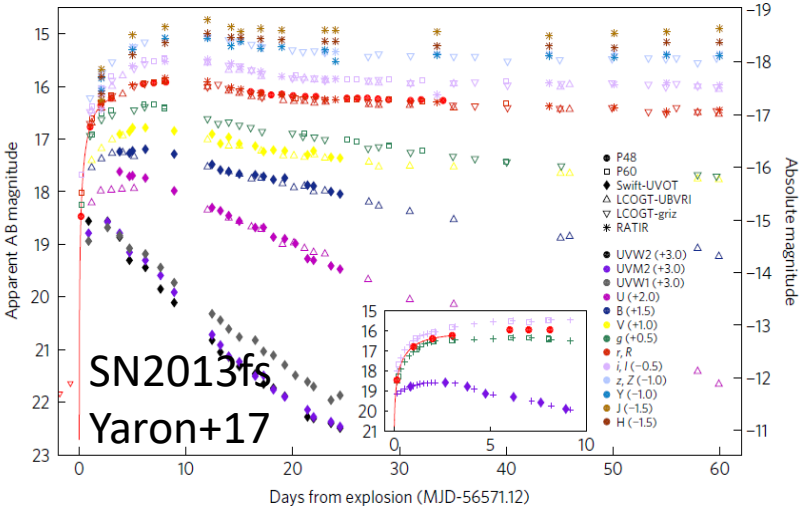
諸隈智貴(千葉工大)、酒向重行、瀧田怜、新納悠、土居守、有馬宣明、張天放、越諒太郎、津々木里咲、笹岡大雅、小林尚人、青木勉、征矢野隆夫、樽沢賢一、森由貴、高橋英則、近藤荘平(東大)、大澤亮(国立天文台)、田中雅臣、村井裕太、押切翔(東北大学), 高橋一郎(東工大)、Jian Jiang (中国科学技術大)、川端美穂、前田啓一、田口健太(京都大学)、川端弘治、中岡竜也(広島大学)、山中雅之(鹿児島大)、星野龍一(電通大)、池田思朗(統計数理研究所); Joao Pedro Pedroso (University of Porto)

Contents

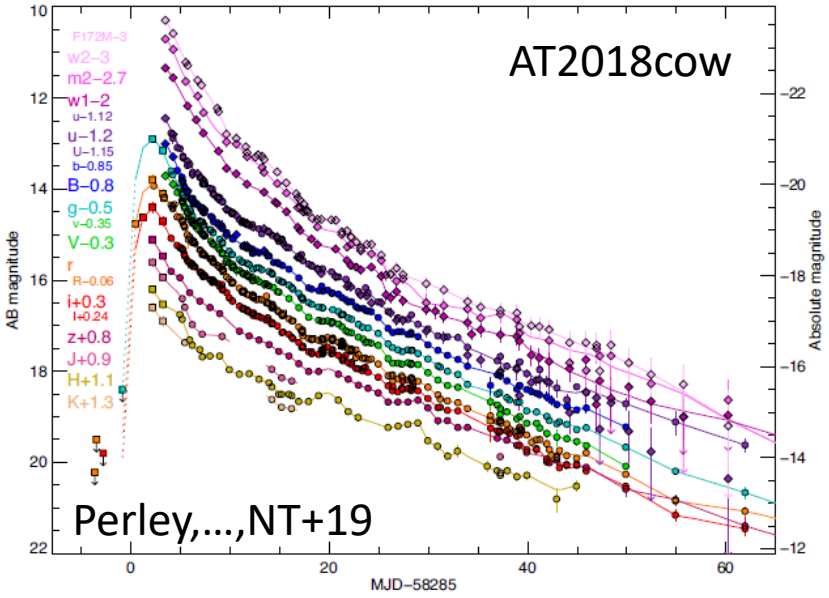
- Aims
- Recent updates

Aims

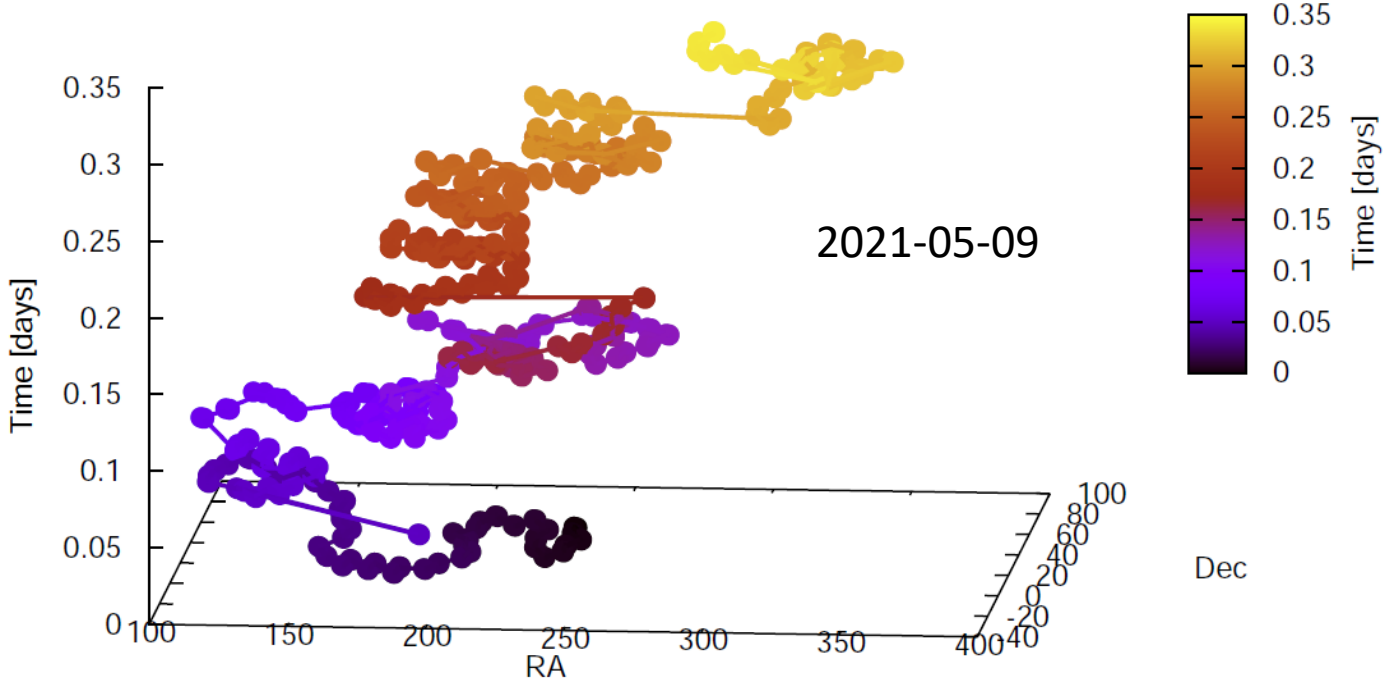
- Early supernovae
  - Last moment of massive stars
  - Progenitor system of SNeIa



- Rapid transients
  - Ultra-striped SNe?
  - Accretion disk around BHs?



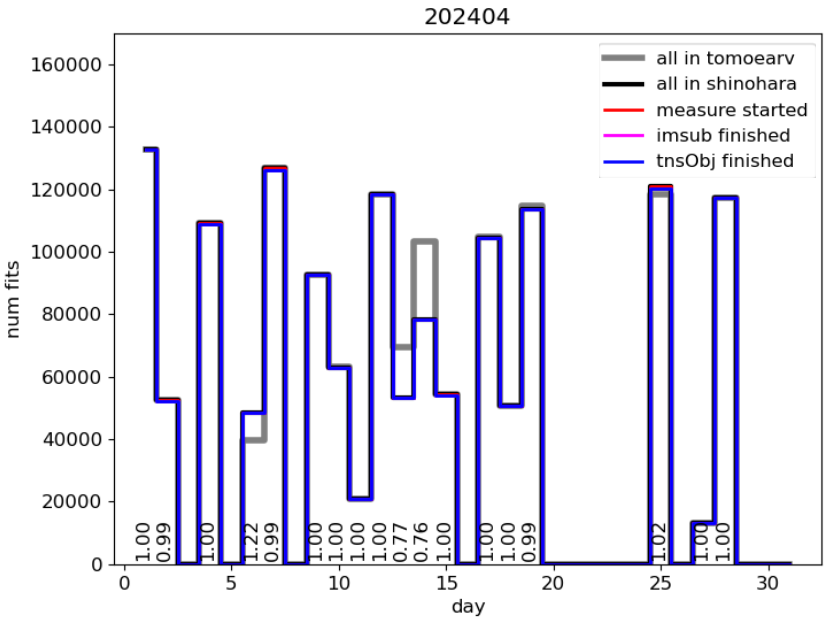
Survey structure

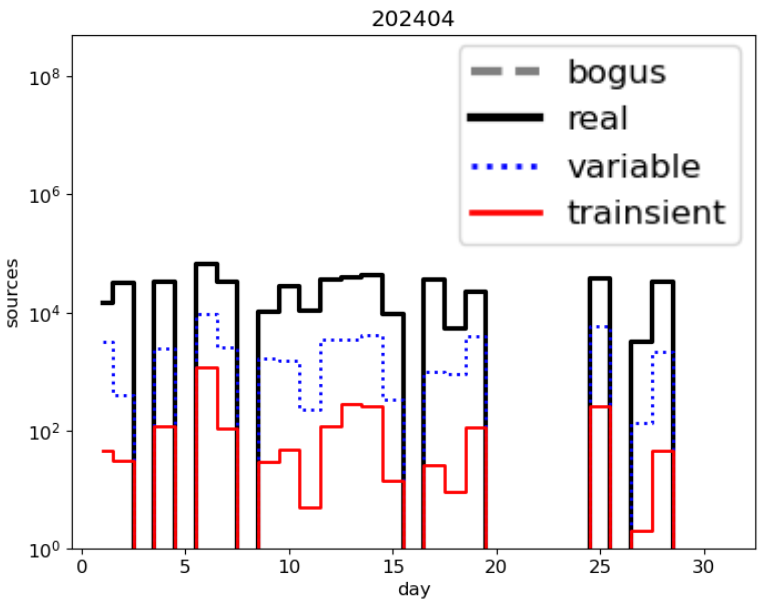


- All-sky survey
  - Exposure time: 9sec
  - 1 day cadence
- High-cadence survey
  - Exposure time: 6sec
  - 30min cadence – 3visits

Recent updates - acceleration

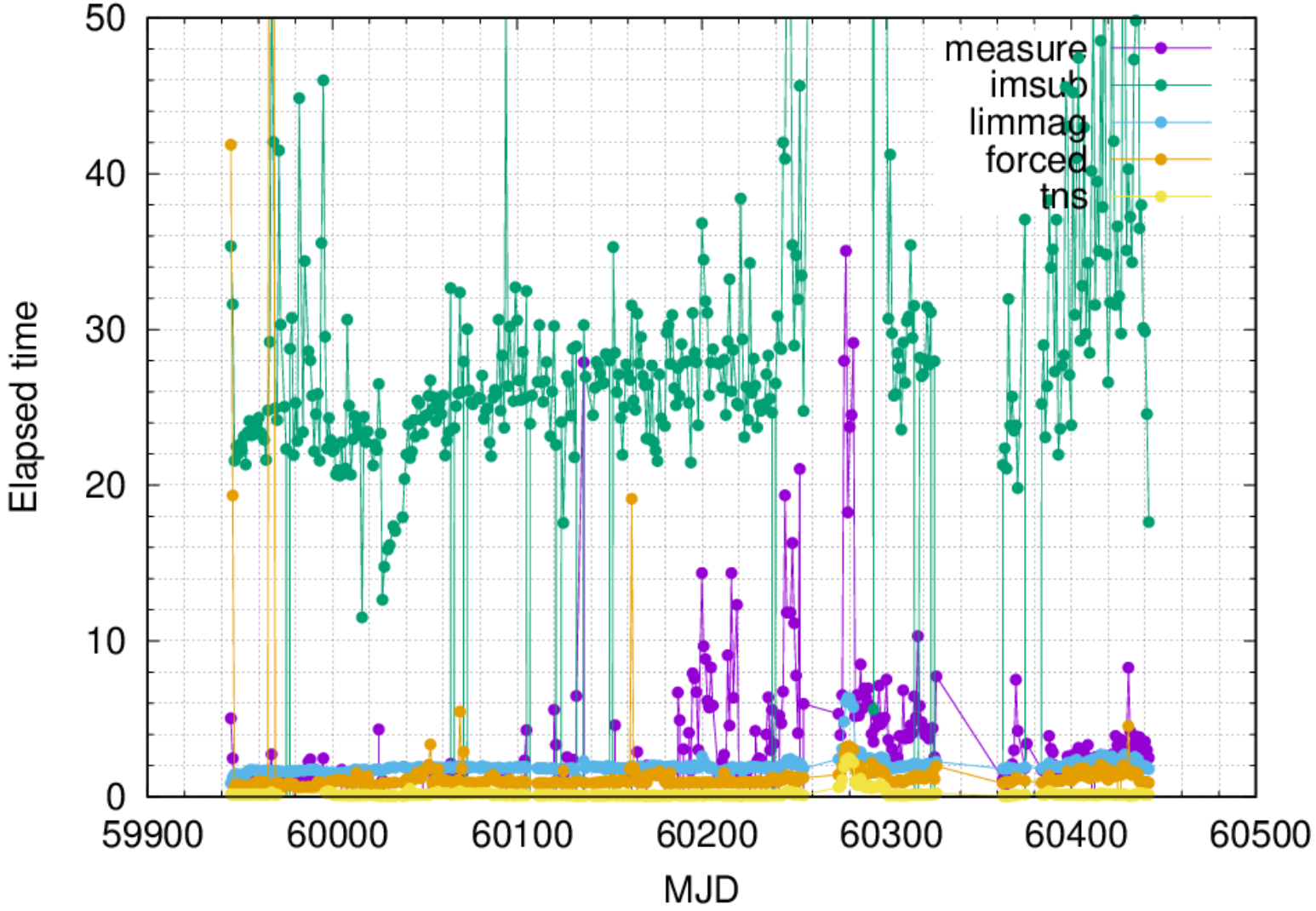
- 任さん(東大情報理工学研究科)
  - オンキャンパスジョブ
- パイプラインの確認、高速化
- PHP+SQLの高速化
  - joinの順番を変える





新納さん

Elapsed time



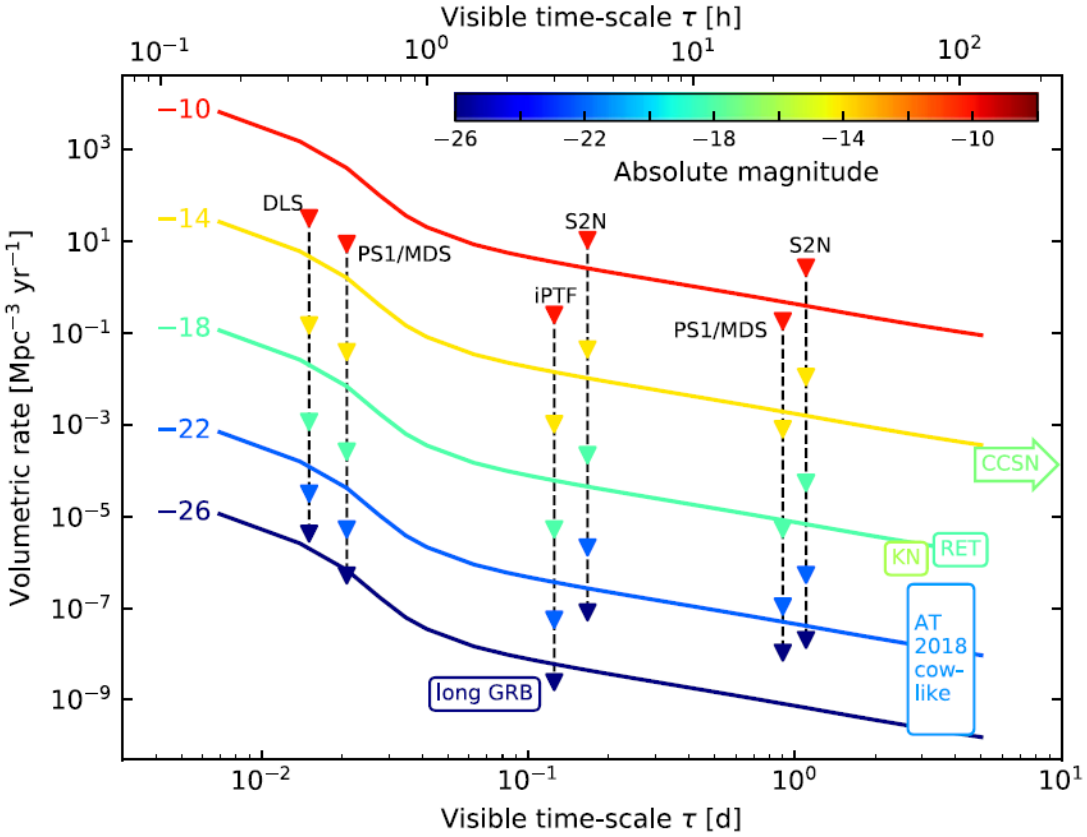
Monthly Notices of the ROYAL ASTRONOMICAL SOCIETY

MNRAS **527,** 334–345 (2024)
Advance Access publication 2023 October 31

https://doi.org/10.1093/mnras/stad3184

A search for extragalactic fast optical transients in the Tomo-e Gozen high-cadence survey

Kakeru Oshikiri,[1]★ Masaomi Tanaka,[1,2]★ Nozomu Tominaga,[3,4,5] Tomoki Morokuma,[6] Ichiro Takahashi,[7] Yusuke Tampo,[8] Hamid Hamidani,[1] Noriaki Arima,[9] Ko Arimatsu,[10]



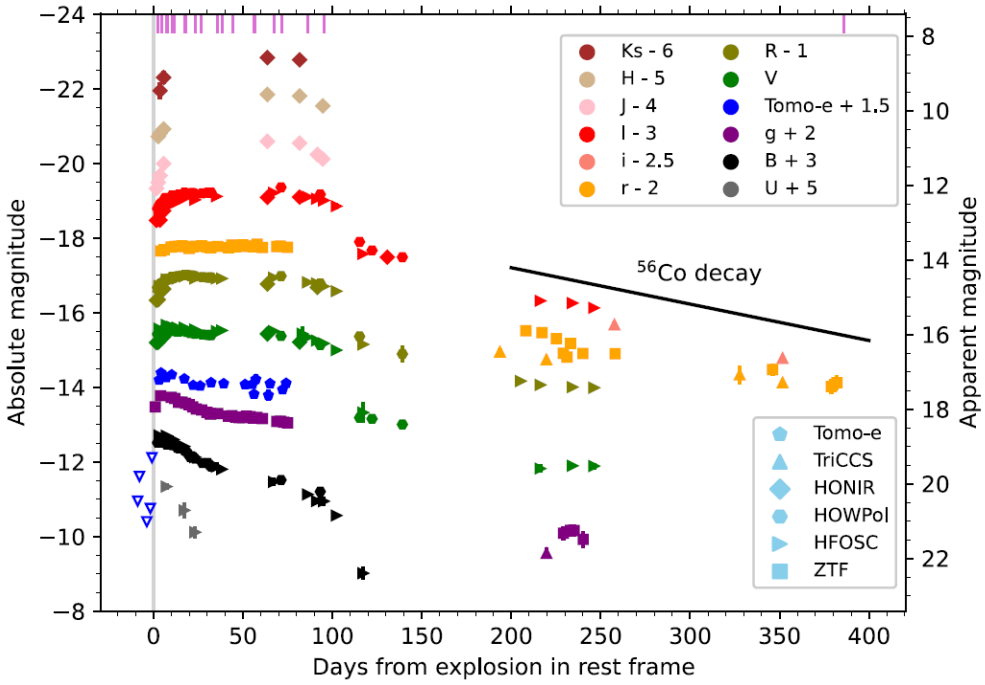
Monthly Notices of the ROYAL ASTRONOMICAL SOCIETY

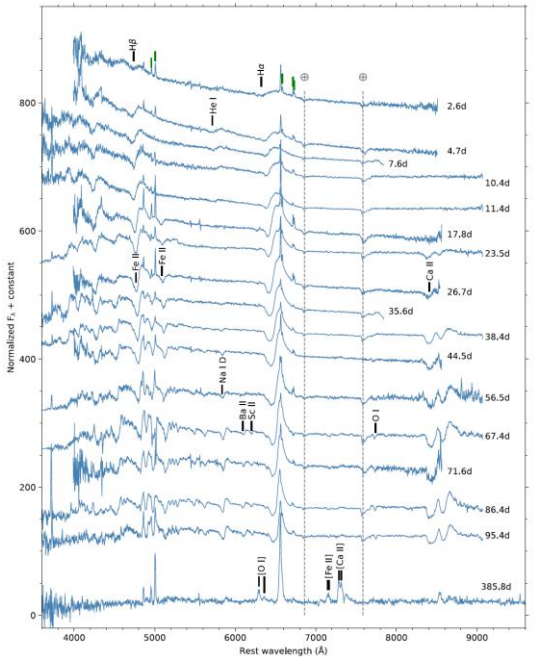
MNRAS **528,** 4209–4227 (2024)
Advance Access publication 2024 January 16

https://doi.org/10.1093/mnras/stae170

Intermediate-luminosity Type IIP SN 2021gmj: a low-energy explosion with signatures of circumstellar material

Yuta Murai [1★] Masaomi Tanaka [1,2★] Miho Kawabata [3] Kenta Taguchi [4] Rishabh Singh Teja [5,6]





A relatively low-mass progenitor of an intermediate-luminosity Type IIP SN can also experience an enhanced mass-loss just before the explosion, as suggested for normal Type IIP SNe.

Updates

- 津々木里咲さん(東京大学)
  - 晴れ間を狙った広域サーベイシステムの開発
- 星野龍一さん(電気通信大学)
  - 機械学習による classification
- 笹岡大雅さん(東京大学)
  - Tomo-e transient survey における新たな即時天体検出手法の導入
  - Forced photometry at arbitrary position

SN2024acn

Tomo-e transient server List Object TNS List TNS Object GW Galaxy Account Logout

202401aaayb

Transient ID: 7922007, Variable ID: 79154360

TNS: 2024acn TNS Tomoe

Number of detections

paramcand: 669, cnncand: 669

psStar: 0

Ref New Sub SDSS DR15 PS1 gri

Current Tag

No tags were assigned.

Insert/Update tag

To remove classification or keywords, select the same value.

Classification: SN Update Classification

Keywords: Update Keywords

Delete tag

J2000 11 10 40.434 +21 06 27.76

FoV: 2.99'

Object Info

R.A., Dec. [deg] = 167.6684734, 21.1077119
[hms] = 11:10:40.43, +21:06:27.76

Nearest GLADE galaxy (ID: 1763983)
Separation from object = 35.8440627672 arcsec
Redshift = 0.186017673009
Distance = 907.821

detId = 322

stacked fits (internal network only)

stacked fits (temporal)

subtracted image

SkyAtlas

Other Archives

SIMBAD

SDSS

PS1

TNS

Seimei ToO (test)

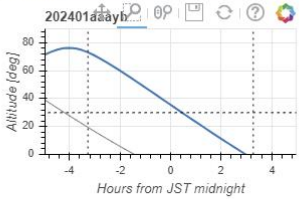
TriCCS

trigger ToO

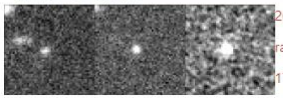
Finding Chart

make finding chart

Visibility



Tomo-e Images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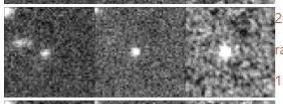
rawId=83941983 (single)
17.42 +- 0.11 (limmag: 18.15)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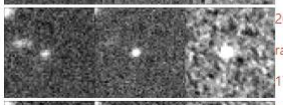
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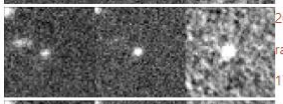
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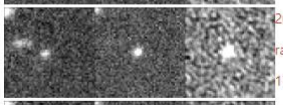
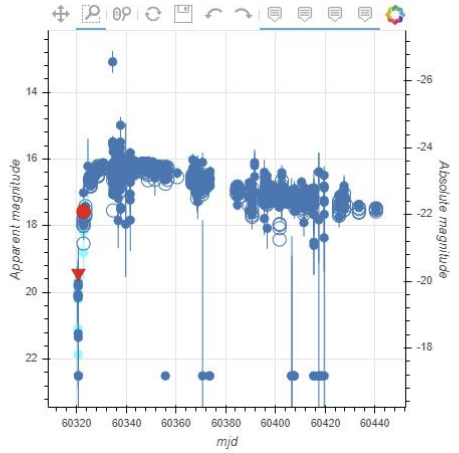

2024-05-03 (mjd: 60433.6115)
rawId=83497350 (single)
17.45 +- 0.10 (limmag: 18.26)

2024-05-03 (mjd: 60433.6113)

Light Curve

Set redshift: Redraw



まとめ

- Stable and fast data analysis
- Speed up the web
- Discovery and classification of candidate
- Uploading Tomo-e images to J-GEM image server (Shikauchi system) was revived
- Sometime swarp fails.

- Automatic alerts