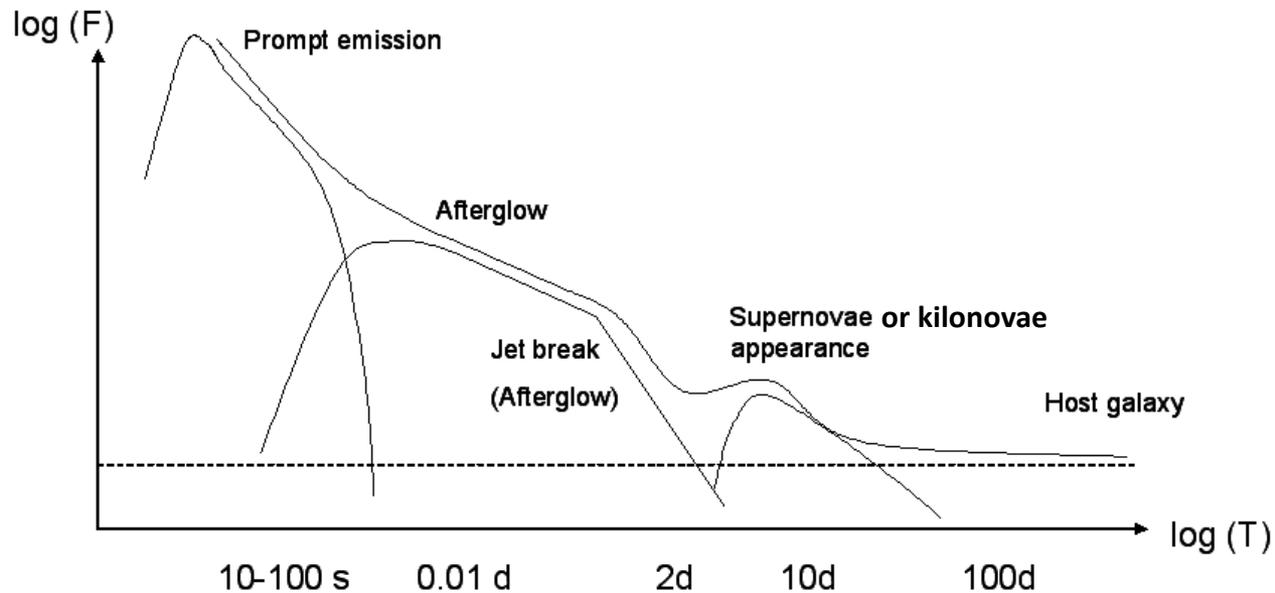


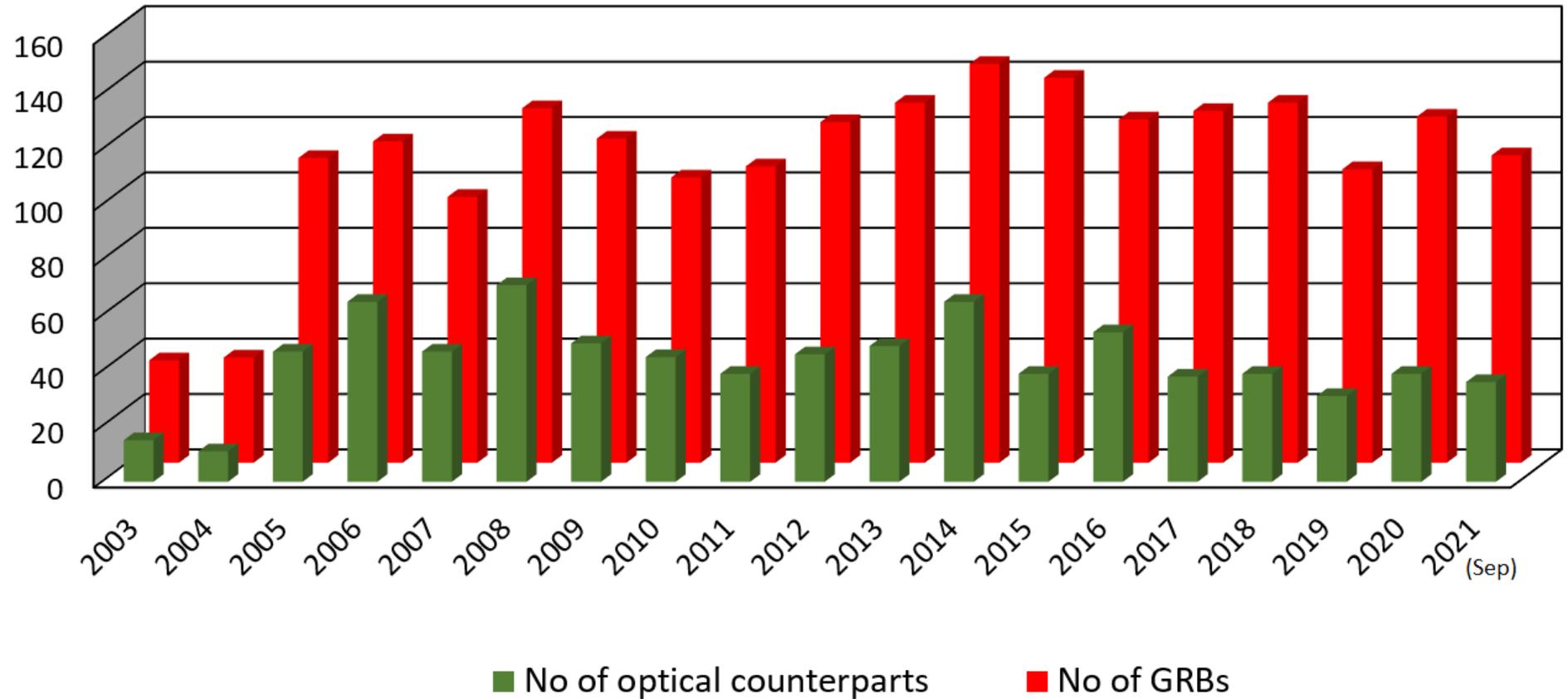
Recent peculiar GRB-related counterparts observed with AZT-22 at Maidanak

Pozanenko Alexei, Volnova Alina, Belkin Sergey,
Pankov Nikolay (IKI RAS)

- Gamma-ray bursts (GRBs) are one of the most energetic and quick-fading transients.
- 90% of GRBs are accompanied by X-ray component, 60% of GRBs have optical counterparts.
- GRB may be observed in optics on different phases of the light curve.



GRBs optical counterparts statistics



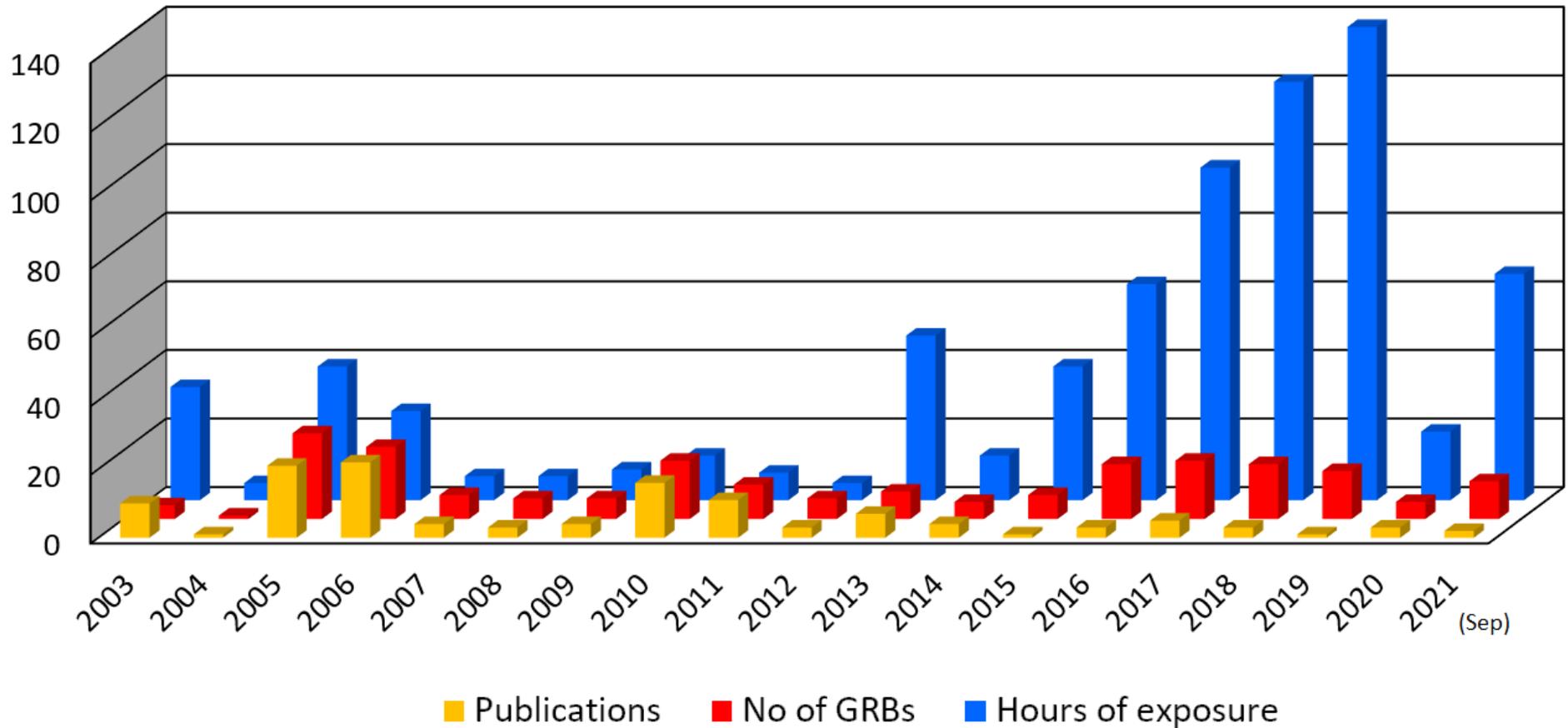
IKI GRB-FuN

- ...stands for Space Research Institute (IKI) Gamma-Ray Bursts (GRB) Follow-up Network (FuN) (Volnova+ 2021).
- It is a virtual network of different instruments in several observatories worldwide, which all share the same program of the GRB observations, and IKI is the main coordinator of the network and the main database holder.
- AZT-22 of MAO collaborates with IKI GRB-FuN since 2003 and have observed 202 different GRBs with ~760 h of total exposure.

IKI GRB-FuN map



IKI GRB-FuN Maidanak statistics

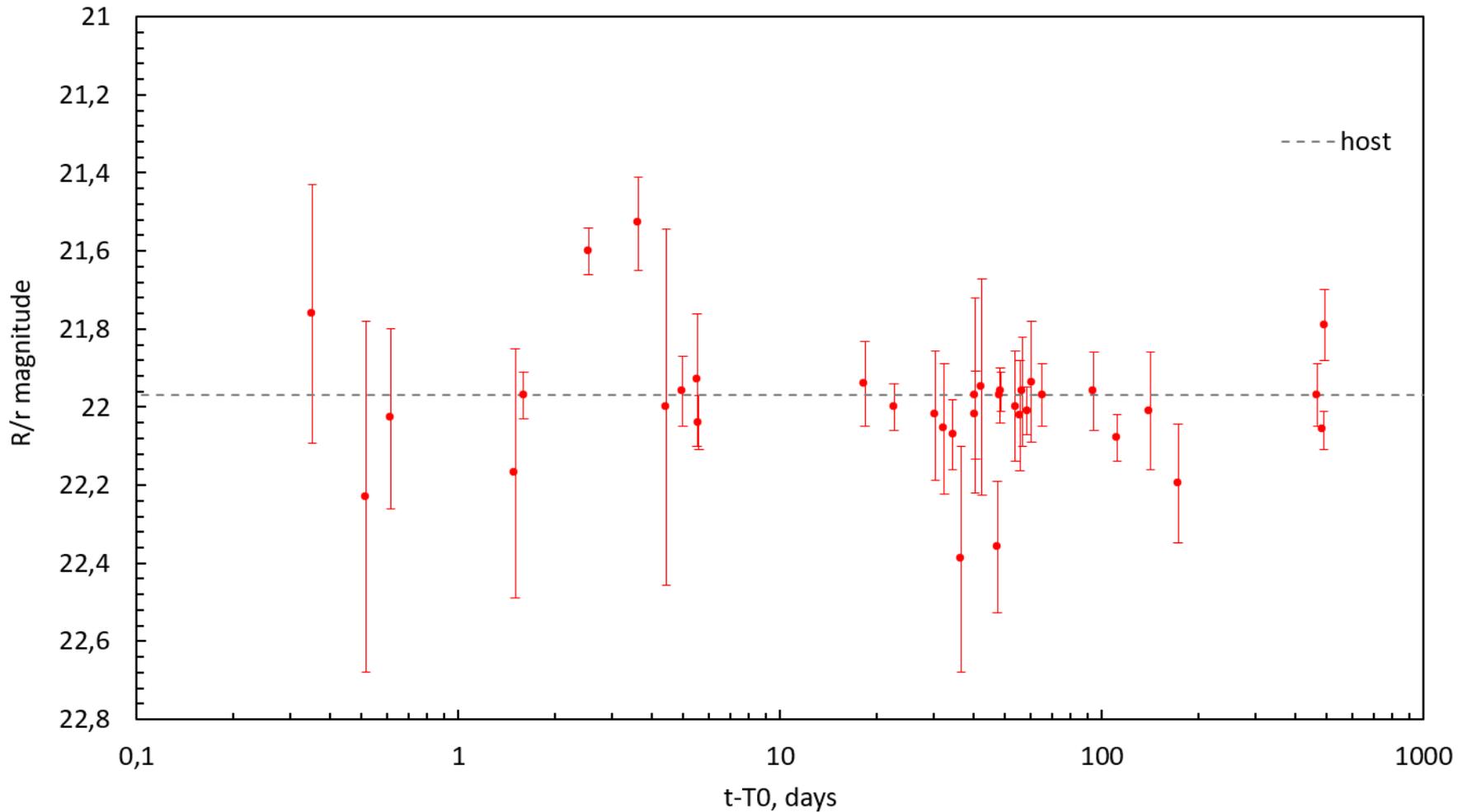


Peculiar GRBs of 2020-2021

GRB 200228B

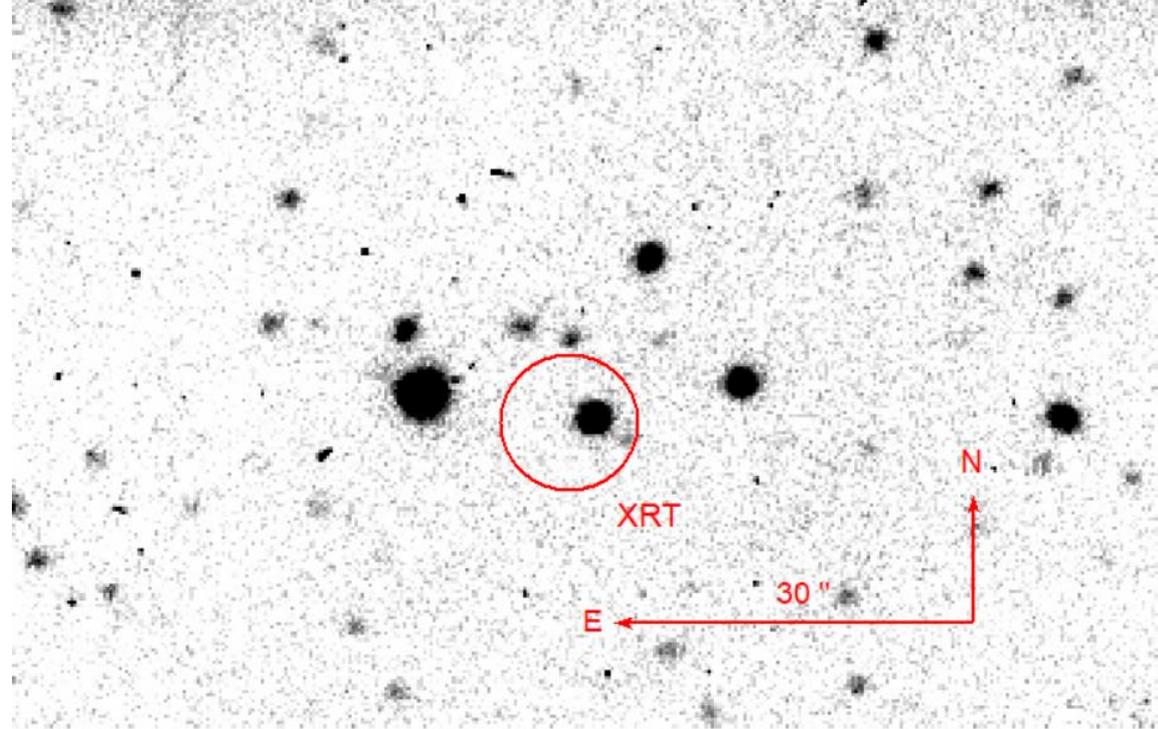
- $t_{90} \sim 25$ s (Swift)
- $z = 0.3743$ (BTA)
- exhibits short term re-brightening which is not consistent with collapsar origin of the event

GRB 200228B

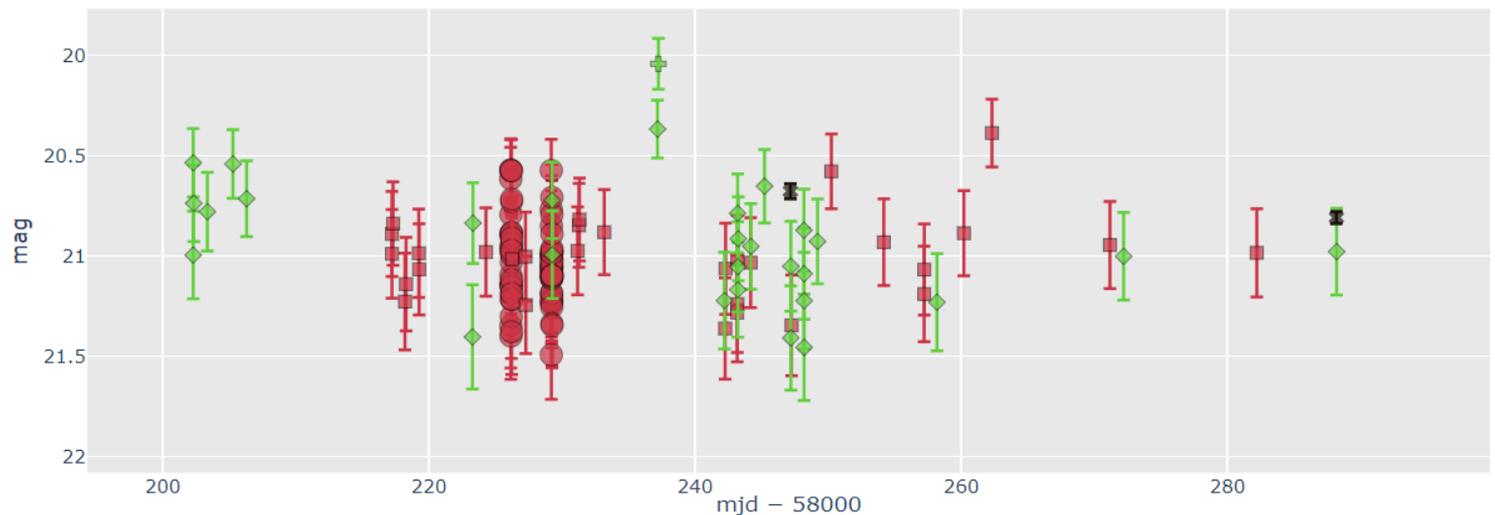


GRB 210413B

- BAT $T_{90} = 1.088 \text{ s} \pm 0.09 \text{ s}$
- Short GRB
- Coincides with SDSS J121007.74+560258.6
- The source has SDSS 'star' marker, but also has GAIA extragalactic marker.
- ZTF light curve shows variability and colours common for quasars

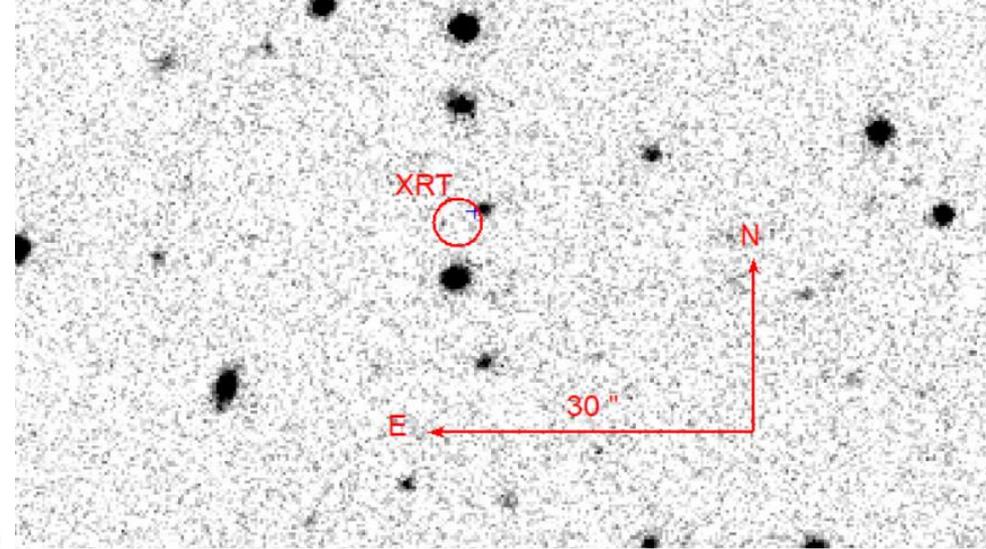


ZTF 2018 light curve

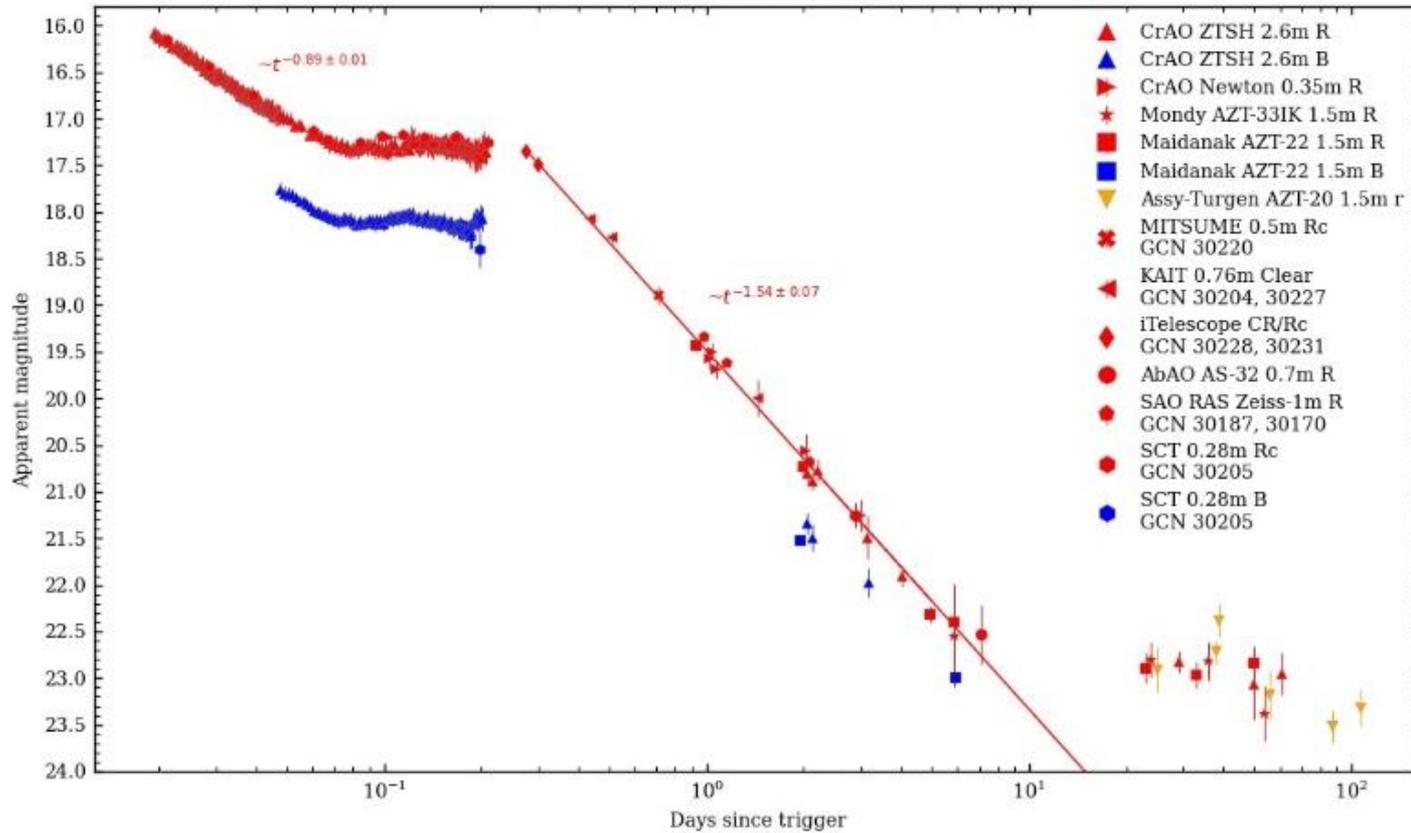


GRB 210610B

- $T_{90} \sim 100$ s
- $z = 1.1345$ (spectrum)
- intervening system at $z = 0.557$



GRB 210610B Light Curve



Looking forward for further fruitful collaboration between IKI GRB-FuN and MAO.