

ZTF Young Explosions

Scanning Guidelines

The **Rapidly Evolving Transients** filter reads from the partnership stream. It has a constraint on age (two detections, upper limit within the last 3 nights, $jd - jd_{\text{starthist}} < 2.5$ days) and no constraints on the rate of evolution (despite what the name suggests).

Below are guidelines for scanning this filter and assigning follow-up. If you see a transient that is real but does not meet any of the criteria below, please e-mail it to Anna Ho (ah@astro.caltech.edu), Adam Miller (amiller@northwestern.edu) and Dan Perley (D.A.Perley@ljmu.ac.uk) so that we can refine our criteria.

For everything below, bear in mind that the current upper limits are an underestimate, probably by around half a magnitude.

Transfer to garbage dump if:

The host is stellar

The host is spectroscopically classified in SDSS as a quasar

If the detections are comparable to the limit and the source is not clearly photometrically evolving over the two epochs:

If the source is ≤ 3 days old, take no action

If the source is > 3 days old, transfer to garbage dump

Otherwise:

If there is a clearly resolved host galaxy

If the source is rising or fading at a rate of > 0.5 mag/day (and this doesn't look like scatter) then this is a P5 target. Consider ToO options. If it's rising, wake Adam up (call +1 847 542 1598) and if it's fading wake Anna up (call +1 650 338-9762).

If the host has a spectroscopic redshift and the absolute mag $M > -15.5$, wake Adam up (call +1 847 542 1598) and he will trigger a Keck spectrum and *Swift* UVOT.

If the transient is brighter than -17 at the time of discovery, transfer to the Ia group.

Assign at P5 to the next DBSP run (and, if bright enough, to SEDM) if:

- The galaxy is $> 10''$ in diameter
- If the peak detection is > 1 mag above the last few upper limits (which will usually mean that the transient is brighter than 19th mag)
- If the light curve is double-peaked
- The transient is red ($g-r > 0$) while rising
- The host has a spectroscopic redshift that makes the transient luminosity $M \leq -20$
- The host is small, bluish, and not a point source (with high photo-z)

If the source is hostless, or if the host is so faint and compact that it's difficult to tell if it's a star or a galaxy

If Galactic lat > 20 :

If the source is rising or fading at a rate of > 0.5 mag/day (and this doesn't look like scatter) then this is a P5 target. Consider ToO options. If it's fading, wake Anna up (+1 650 338 9762).

If the source is not rising or fading that rapidly, assign at P5 to the next DBSP run (and, if bright enough, to SEDM). Trigger multicolor photometry with LT.

If $7 < |b| < 20$:

Assign at P3 to the next DBSP run (and, if bright enough, to SEDM).