



ZWICKY TRANSIENT FACILITY

SEDm allocation

*Report from the Experiment &
Framework Committee*

*Ariel Goobar
The Oskar Klein Centre
Stockholm University*



Outcome of WP exercise

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(call for proposals)

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- [sedm-white-paper.pdf](#): SEDm white paper from ToO? group
- [E-Host.pdf](#): Unique Transients in Elliptical Galaxies
- [Bright Transients Survey](#): The ZTF Bright Transients Survey ← Includes Caltech time
- [Weizmann-Infant_SNe.pdf](#): SEDM rapid observations of infant SNe



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The two biggest projects "Cosmic census" and "Bright Transients Survey" are identical in terms of targets (= from now on called "BCS"). Large overlap also among other WPs. Seems like they all fit.



Scheduling and ranking

- The current idea is that SEDm will be scheduled in blocks of 15 minutes, from now on to be referred to as “SEDBs”.
- The ratio of partnership/Caltech blocks is 2/1, roughly preserved on nightly basis. Thus, on an average 6 hs night there should be 24 SEDBs, 16 for the partnership and 8 for Caltech.
- As for the P48 scheduling, there should always be more SEDBs in the queue, as many nights (roughly half) will be longer than average.



ZTF Proposed process

- We start from the WPs and make a budget for the requested SEDBs for the various partnership science cases and consider a period of 6 months over which the budget is to be spent on, resulting in 2920 SEDBs.
- Assumed performance (the actual magnitude limits will have to be revised after SEDm is refurbished):
 - $m < 18.5$ targets require 2 SEDBs; (See Mickael's talk)
 - $18.5 < m < 19$ 3 SEDBs;
 - $19.0 < m < 19.5$ 4 SEDBs



- This boils down to about the following “average” night:
 - 4 BCS = 8 SEDBs
 - 1 SS = 2 SEDBs
 - + 2 “fainter” target (young SNe, TDEs, MMA, E-host, etc) = 6 SEDBs



ZTF

Thus, for a 6 months period
the expected budget comes
out to (roughly!)

■ BCS =	1446 SEDBs	
■ SS =	364	
■ Stripped envelope SNe =	65	
■ Infant SNe =	65	
■ ToO GRB+GW =	195	
■ ToO Neutrinos =	312	
■ Elliptical hosts =	83	
■ TDEs =	390	
■ Total	2920	SEDBs



Proposed ranking scheme

- In order to accommodate >16 SEDBs/night in the queue as not to run out of targets, we could allocate some extra budget to each science category to start with, say 20-30% extra, i.e., a bit more but not so much that we can expect abuse of any sort.
- Every object enters the queue with a relative weight, $\mathbf{W}_i$, involving the total amount of $\mathbf{SEDB}_i$ units for the “i-th” science case and $\mathbf{DT}_i$, a factor that reflects the time window under which the spectrum would be most useful for each science, e.g., $DT = 1$ for everything except ToO GRB/GW and Infant SNe (and some SS targets?), in both these cases you want to sail up quickly in the queue, say $DT = 0.2$. (TBD).
- $\mathbf{W}_i = 1/(\mathbf{SEDB}_i * \mathbf{DT}_i);$
- Makes sense?



ToDoS

- Sanity checks. Any hurdles for implementation?
- Need a human in charge to make sure things go as planned (especially while we tune in the system), and if not, identify the trouble maker. Each SEDm team to appoint a contact person.