

Microlensing Filter Requirements

Wide red filter for majority (>95%) of observations.

- Requirements:
 - Broad; collect as many photons as possible.
 - Optimized for reddened bulge turn-off stars (or slightly later).
 - Default choice: $\sim 1.0 - \sim 2.0 \mu\text{m}$ (or red cut-off)
- $N_{\text{det}} \propto (\Gamma_{\text{phot}})^{2/3}$
 - $1.1-1.4 \mu\text{m}$: $\sim 40\%$ reduction in detections in “graceful” regions; more severe at “edges” (HZ, mars mass planets)

Narrow, bluer filter for <5% of observations.

- Used to determine color of source star.
- Cadence: few times per day (to sample shortest events)
- Requirements:
 - $\lambda_{\text{eff,narrow}} \neq \lambda_{\text{eff,wide}}$ to give color leverage.
 - Disjoint if possible to avoid covariance.
 - Not too blue (sources, lenses are red)
 - Not too red
- Likely one of the other filters will be acceptable.
 - $0.85-1.1 \mu\text{m}$ nearly perfect.
 - $0.6-0.85 \mu\text{m}$ probably acceptable.
 - $1.0-1.3 \mu\text{m}$ probably acceptable.

