Metric Trends in V2.0

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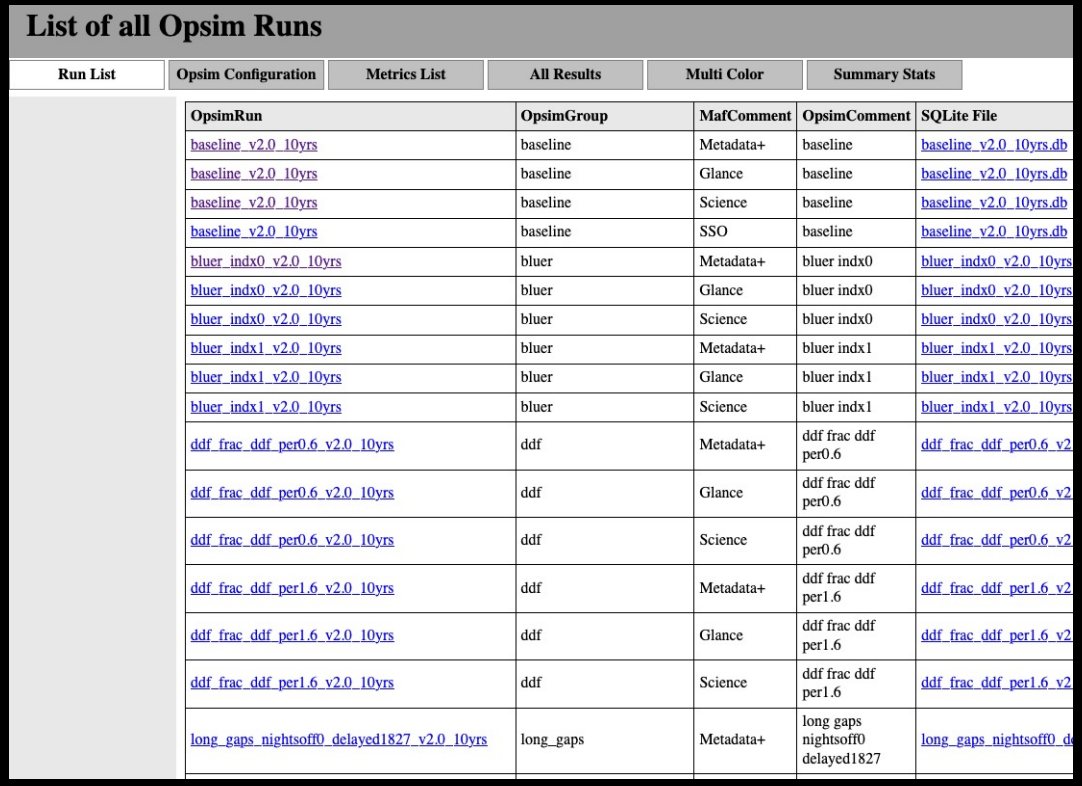
Go see the metrics yourself!

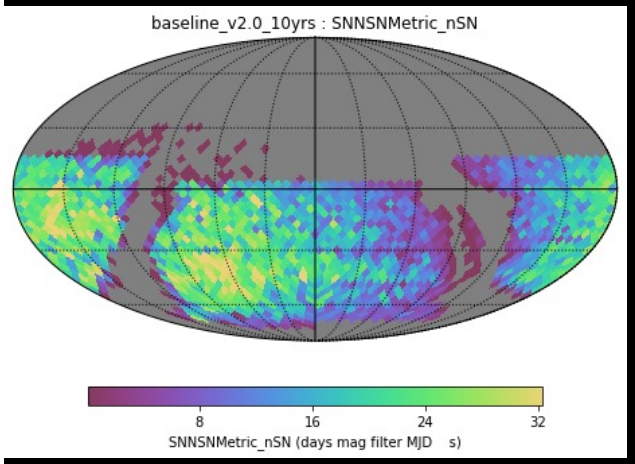
http://astro-lsst-01.astro.washington.edu:8080/

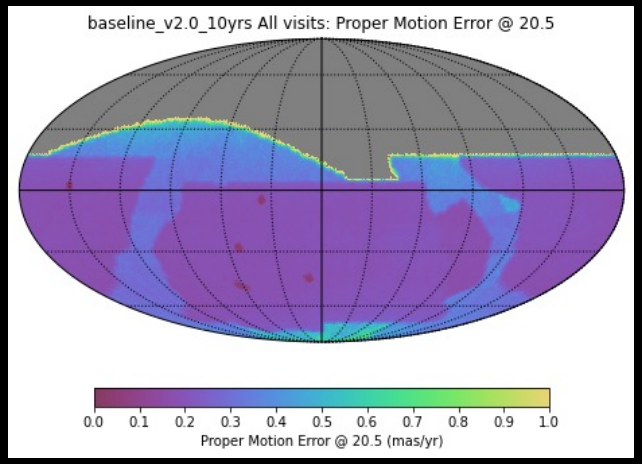


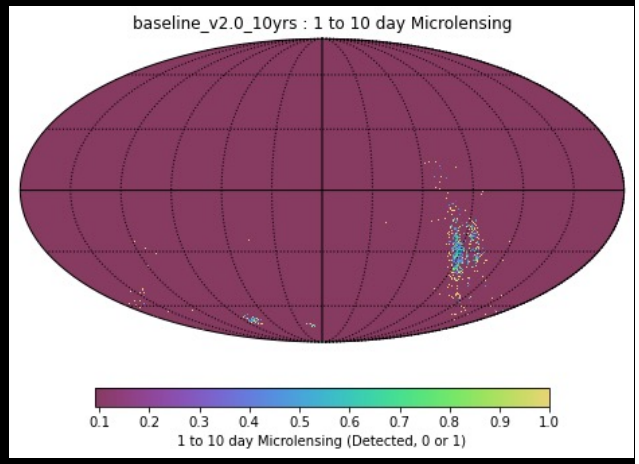
List of all Opsim Runs

Run List | Opsim Configuration | Metrics List | All Results | Multi Color | Summary Stats

OpsimRun	OpsimGroup	MafComment	OpsimComment	SQLite File
baseline_v2.0_10yrs	baseline	Metadata+	baseline	baseline_v2.0_10yrs.db
baseline_v2.0_10yrs	baseline	Glance	baseline	baseline_v2.0_10yrs.db
baseline_v2.0_10yrs	baseline	Science	baseline	baseline_v2.0_10yrs.db
baseline_v2.0_10yrs	baseline	SSO	baseline	baseline_v2.0_10yrs.db
bluer_indx0_v2.0_10yrs	bluer	Metadata+	bluer indx0	bluer_indx0_v2.0_10yrs
bluer_indx0_v2.0_10yrs	bluer	Glance	bluer indx0	bluer_indx0_v2.0_10yrs
bluer_indx0_v2.0_10yrs	bluer	Science	bluer indx0	bluer_indx0_v2.0_10yrs
bluer_indx1_v2.0_10yrs	bluer	Metadata+	bluer indx1	bluer_indx1_v2.0_10yrs
bluer_indx1_v2.0_10yrs	bluer	Glance	bluer indx1	bluer_indx1_v2.0_10yrs
bluer_indx1_v2.0_10yrs	bluer	Science	bluer indx1	bluer_indx1_v2.0_10yrs
ddf_frac_ddf_per0.6_v2.0_10yrs	ddf	Metadata+	ddf frac ddf per0.6	ddf_frac_ddf_per0.6_v2
ddf_frac_ddf_per0.6_v2.0_10yrs	ddf	Glance	ddf frac ddf per0.6	ddf_frac_ddf_per0.6_v2
ddf_frac_ddf_per0.6_v2.0_10yrs	ddf	Science	ddf frac ddf per0.6	ddf_frac_ddf_per0.6_v2
ddf_frac_ddf_per1.6_v2.0_10yrs	ddf	Metadata+	ddf frac ddf per1.6	ddf_frac_ddf_per1.6_v2
ddf_frac_ddf_per1.6_v2.0_10yrs	ddf	Glance	ddf frac ddf per1.6	ddf_frac_ddf_per1.6_v2
ddf_frac_ddf_per1.6_v2.0_10yrs	ddf	Science	ddf frac ddf per1.6	ddf_frac_ddf_per1.6_v2
long_gaps_nightsoff0_delayed1827_v2.0_10yrs	long_gaps	Metadata+	long gaps nightsoff0 delayed1827	long_gaps_nightsoff0_d







Number of Sne Ia. This metric does a Monte Carlo at each HEALpixel and computes how many SNe it expects would be observed

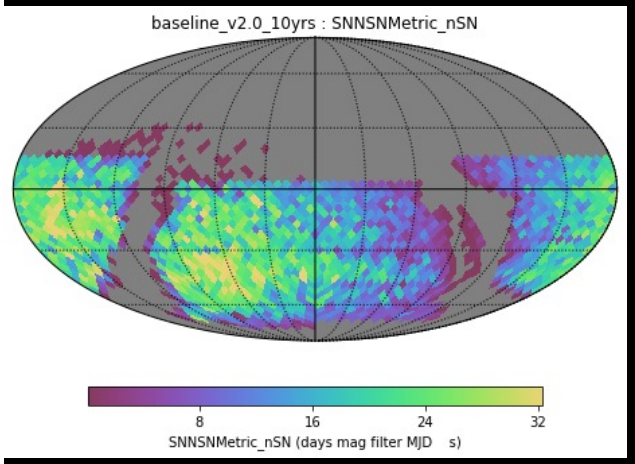
Baseline = 25,375

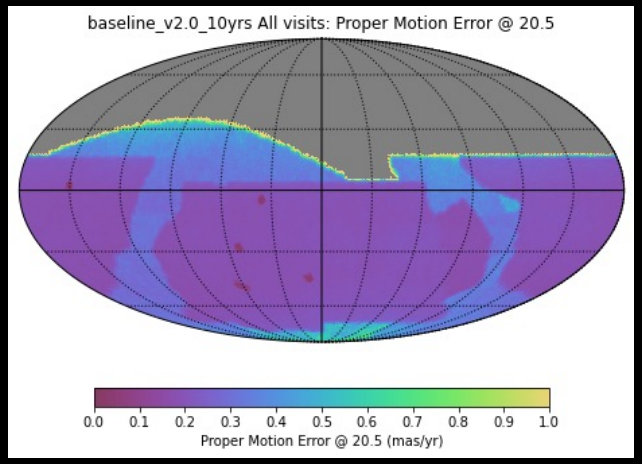
Uncertainty of the proper motion fit to a 20.5 mag star at each HEALpixel

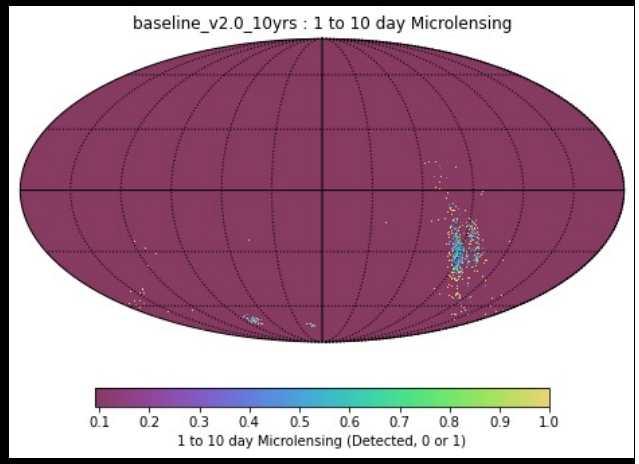
Baseline median = 0.2 mas/yr (plotting inverse so bigger values are always better)

Generate 10,000 fast microlensing events, see what fraction pass detection criteria

Baseline = 47% detected



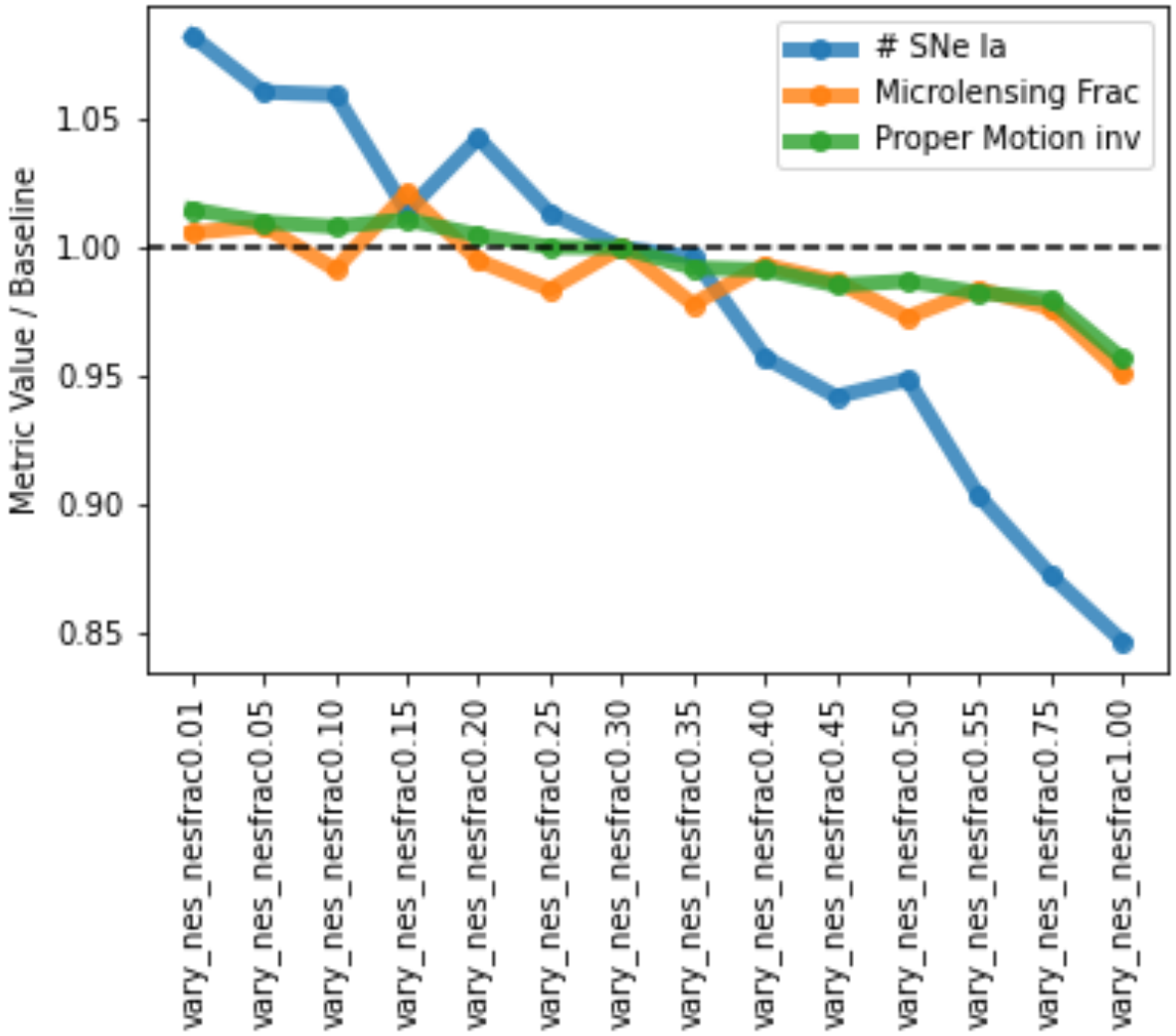




As an aside, while very different metrics, all three of these rely on the 5-sigma depth column from the simulation output.

None of them use a spatial cut, filter cut, “WFD-only” cut, exposure time cut, etc.

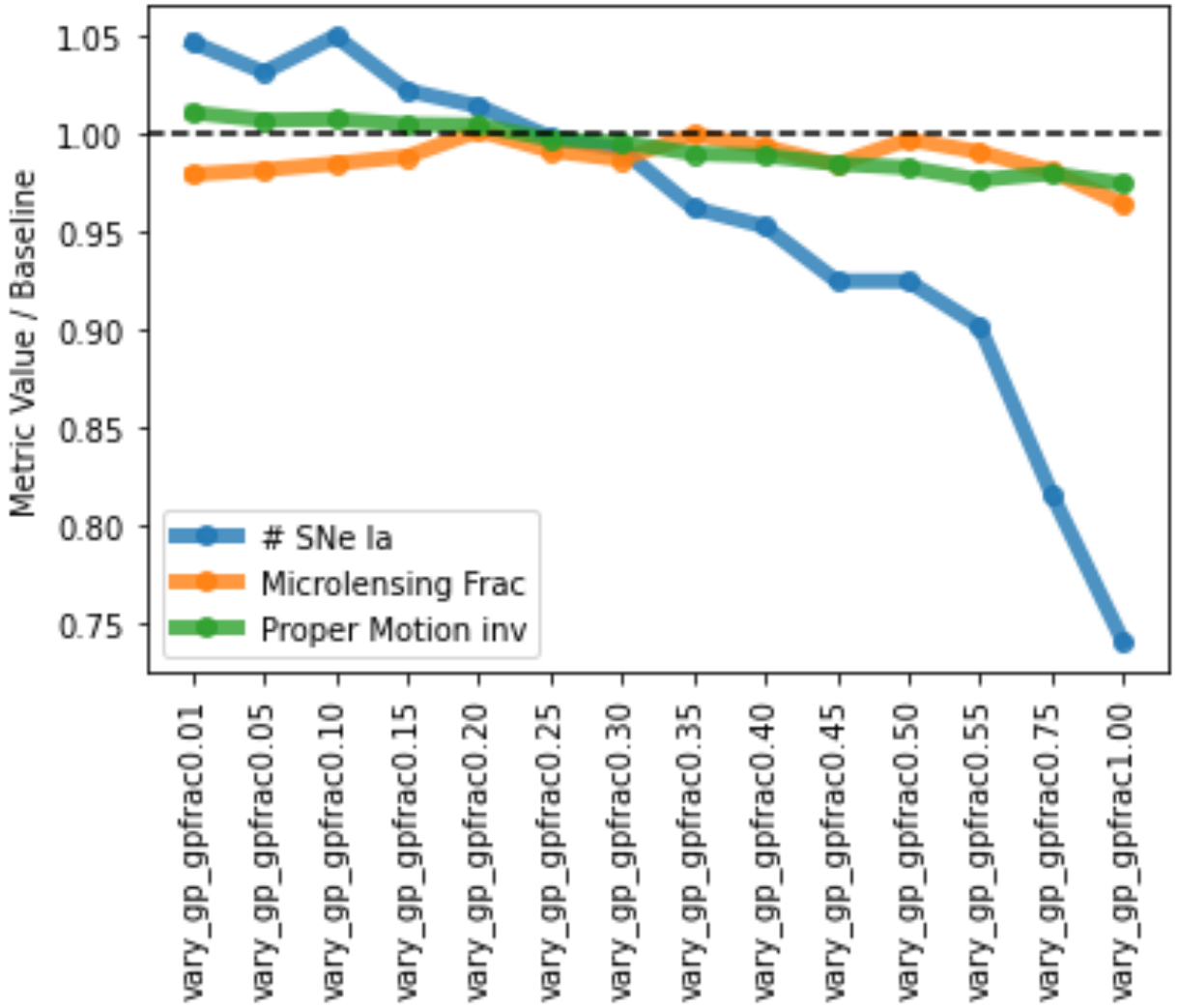
If your metric does not use the 5-sigma depth, I can almost guarantee that it will have some odd edge cases and give incorrect results for some simulations.



Vary_NES

As we increase time in the North Ecliptic Spur, science in other parts of the sky goes down.

Solar system metrics currently running, expect most of them to trend the other way.

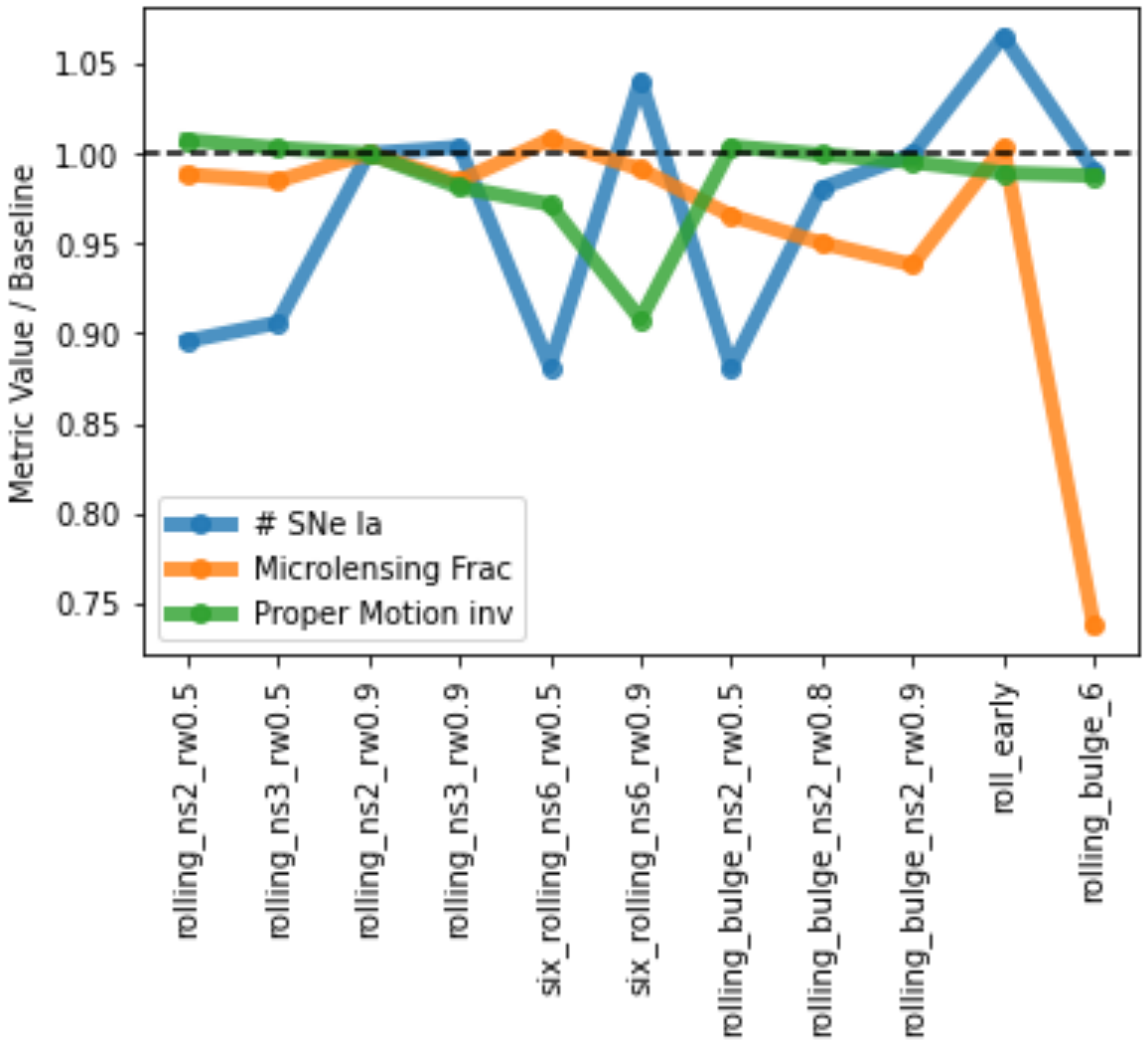


Vary_gp

Increasing time in the dusty Galactic plane

- Hurts WFD metrics
- Very small impact to the bulge metrics

Need some metrics that trace science in the dusty plane

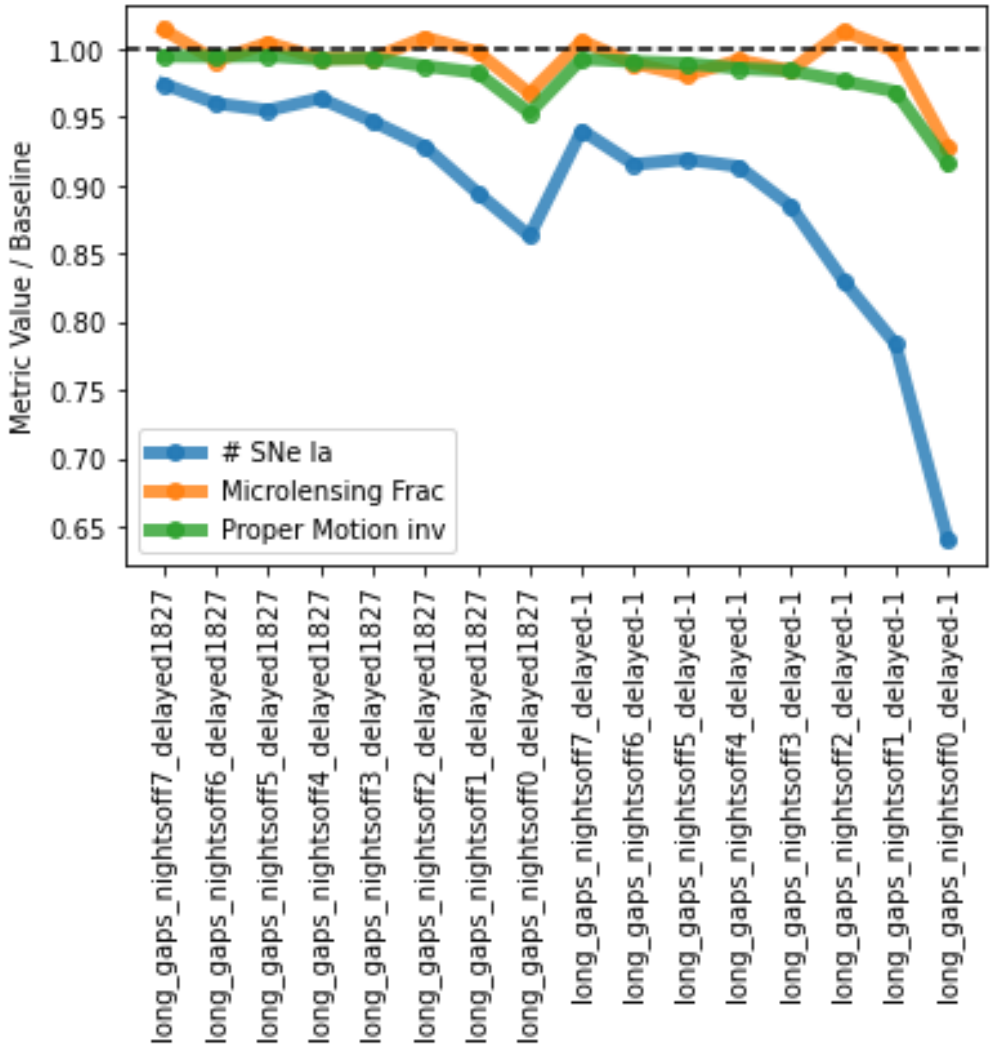


Rolling

- SNe like early rolling and stronger rolling
- Being too aggressive with rolling in the bulge kills fast microlensing

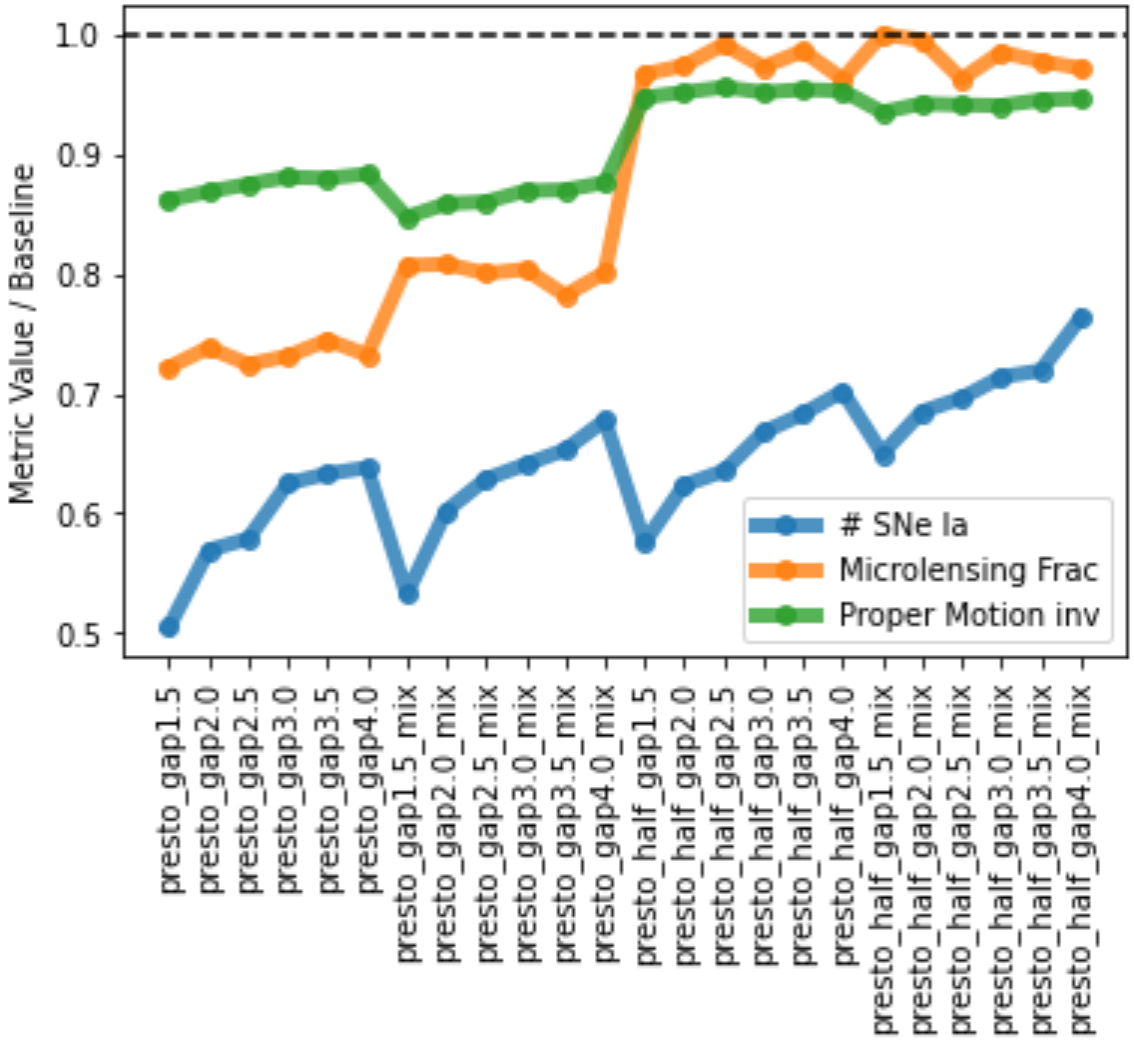
Interesting trade-offs to be made!

We can now roll different regions independently: Bulge, dusty plane, WFD can all optimize on their own



Long_gaps

- Need a science metric that shows benefit of long gaps (4-7 hour timescale)



Presto

- Need a science metric that shows the advantage of triples in a night
- Targeting longer gaps is less of a penalty for SNe (can't do multiple triples in a night)

Conclusions

- We can see some clear trends in the simulations
- Need plenty of new metrics to quantify trade-offs