Covariance of needltes estimator

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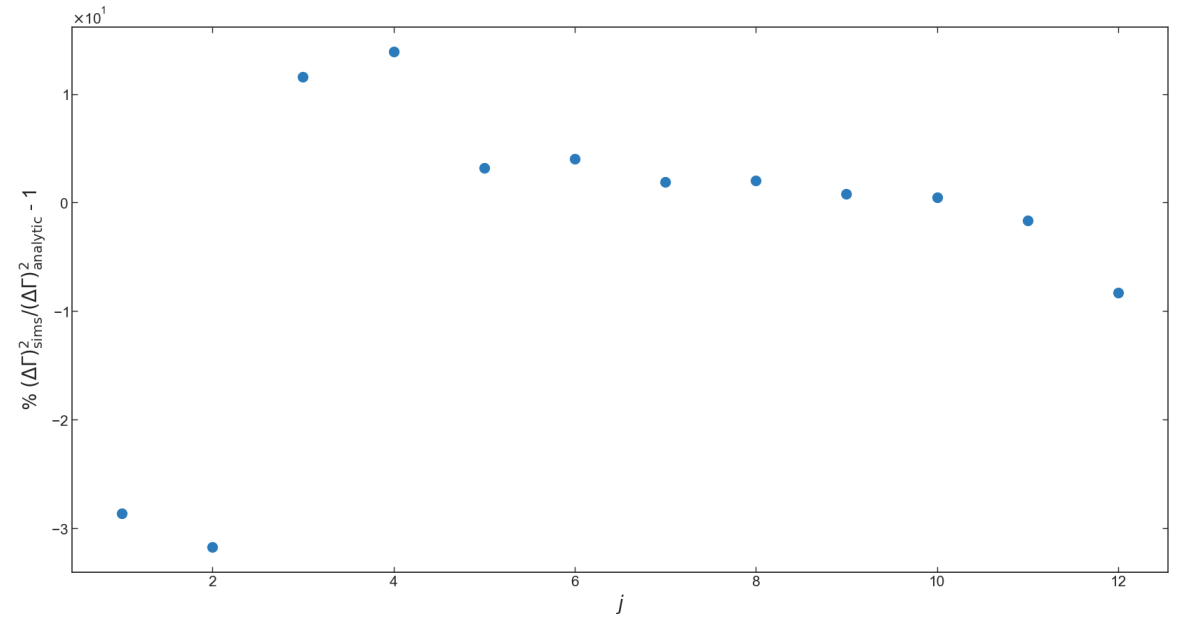
EuclidxPlanck mask

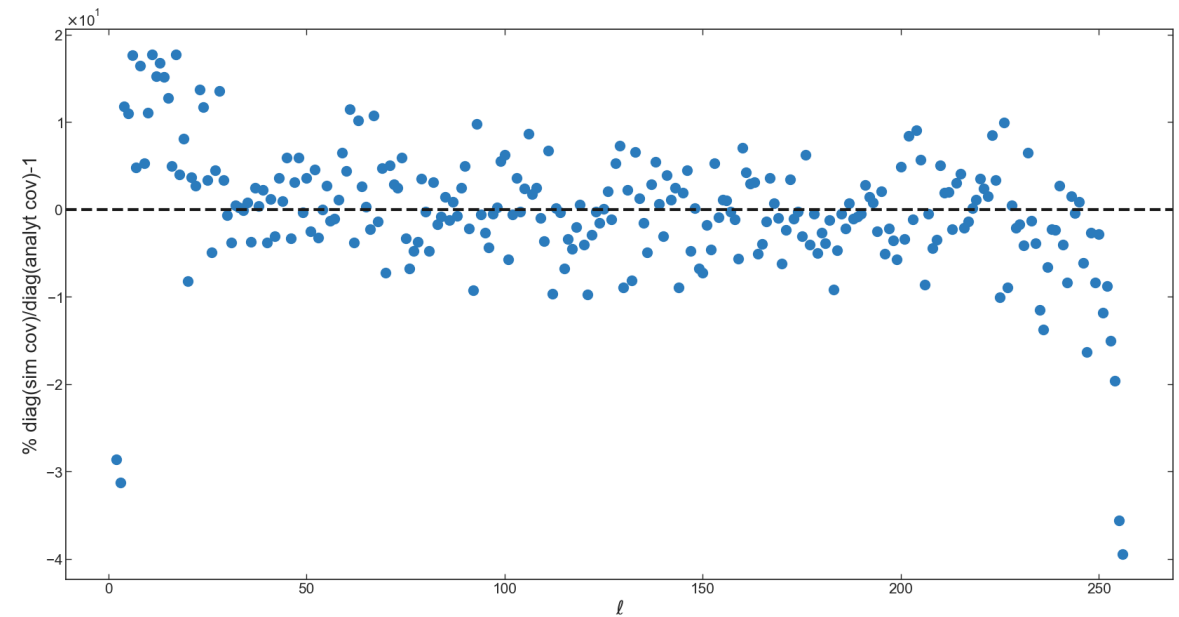- $f_{sky} = 0.36$

Map EuclidxPlanck, $f_{sky} = 0.35$, $N_{side} = 128$

EuclidxPlanck MASK NEEDLETS $D = 1.59$, $j_{max} = 12$, $\ell_{max} = 256$, $N_{side} = 128$, $f_{sky} = 0.3563690185546875$
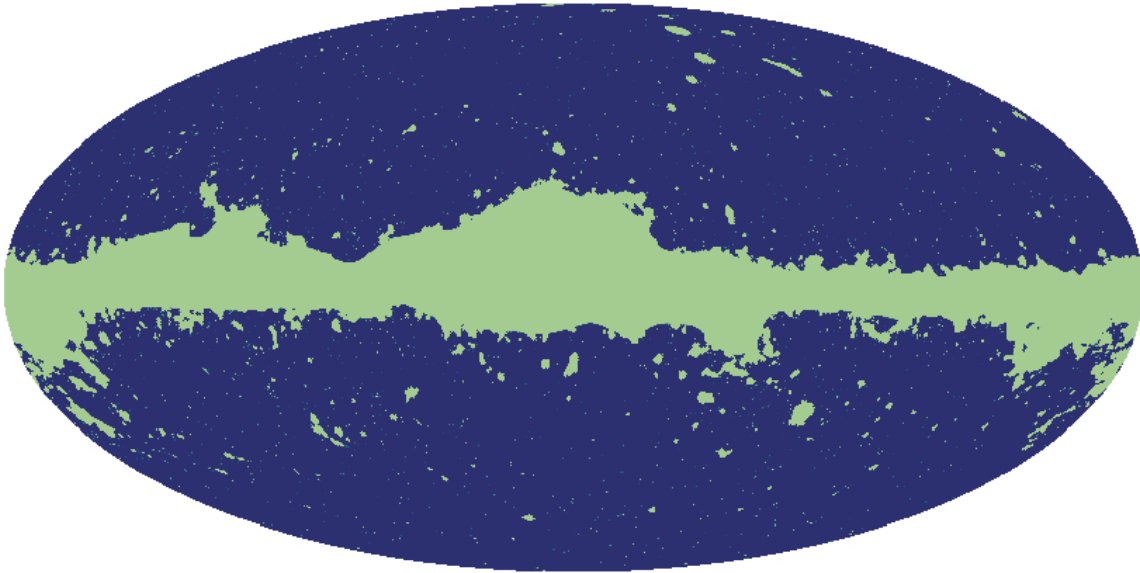

EuclidxPlanck Mask PCL , $\ell_{max} = 256$, $N_{side} = 128$, $f_{sky} = 0.3563690185546875$
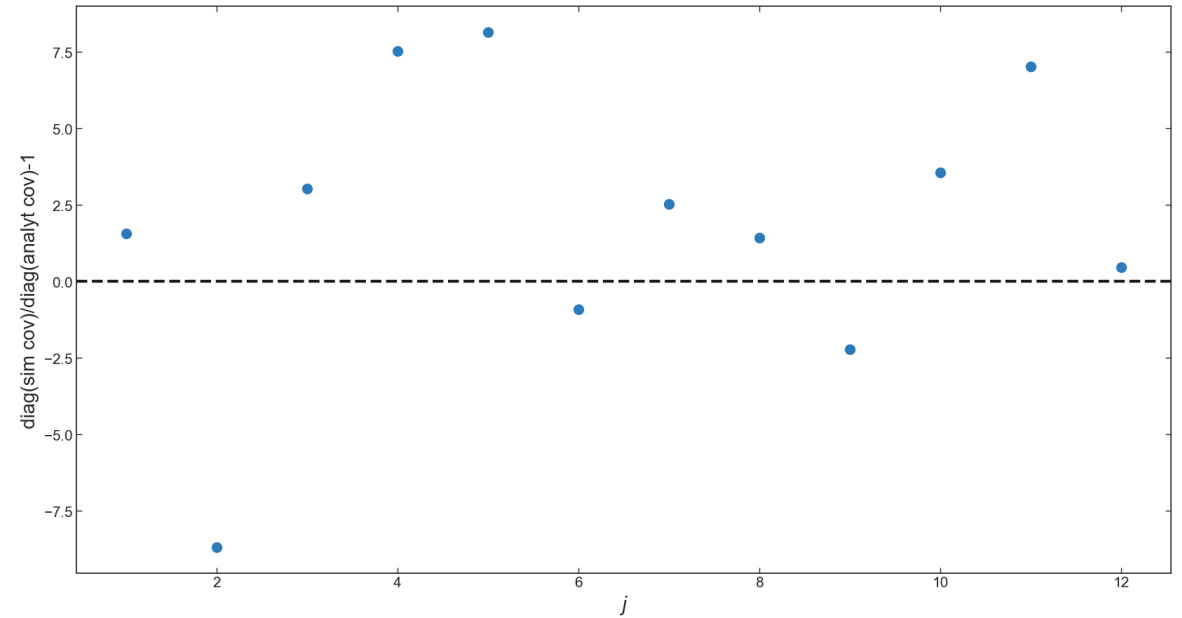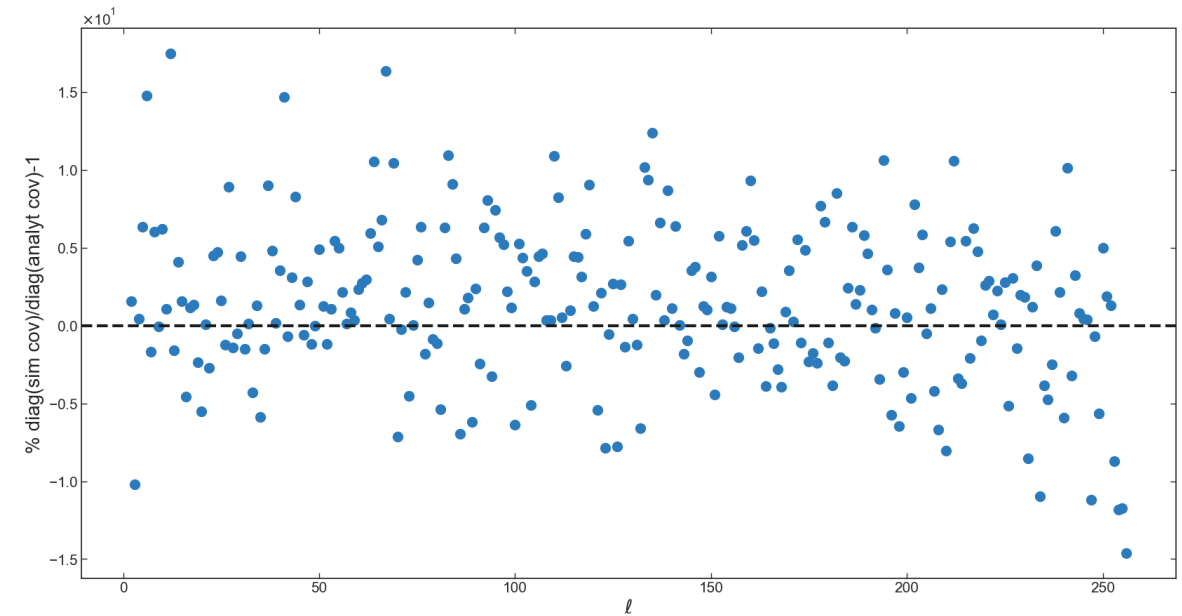
Planck mask

- $f_{sky} = 0.78$

Mask Planck 2018, $f_{sky} = 0.78$, $N_{side} = 512$

Planck Mask NEEDLETS $D = 1.59$, $j_{max} = 12$, $\ell_{max} = 256$, $N_{side} = 128$, $f_{sky} = 0.7794118722279867$

Planck Mask PCL , $\ell_{max} = 256$, $N_{side} = 128$, $f_{sky} = 0.7794118722279867$
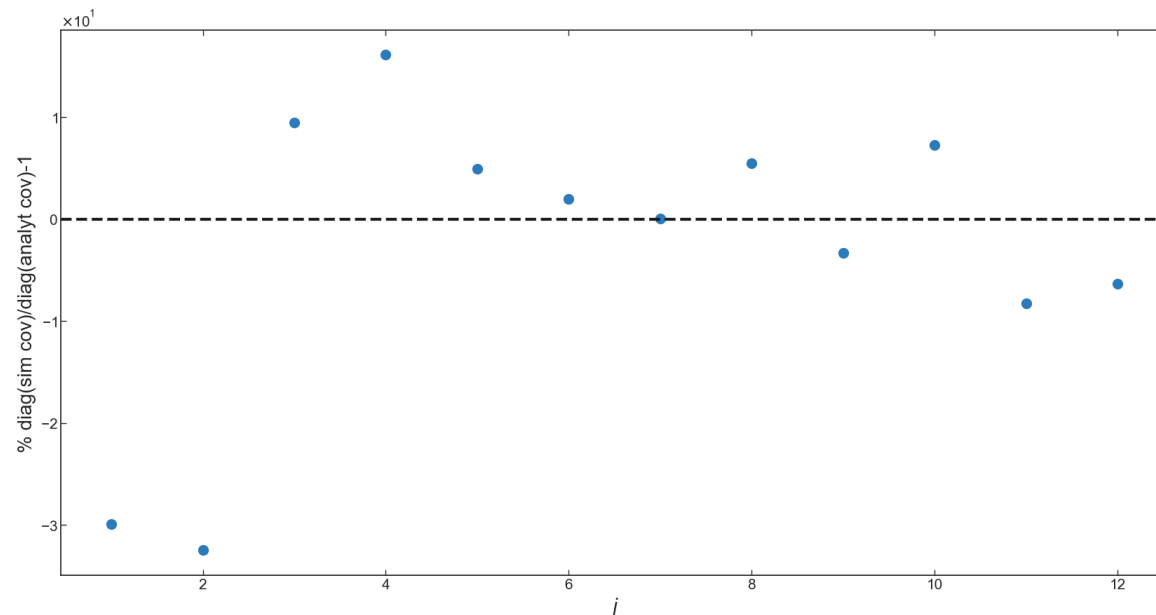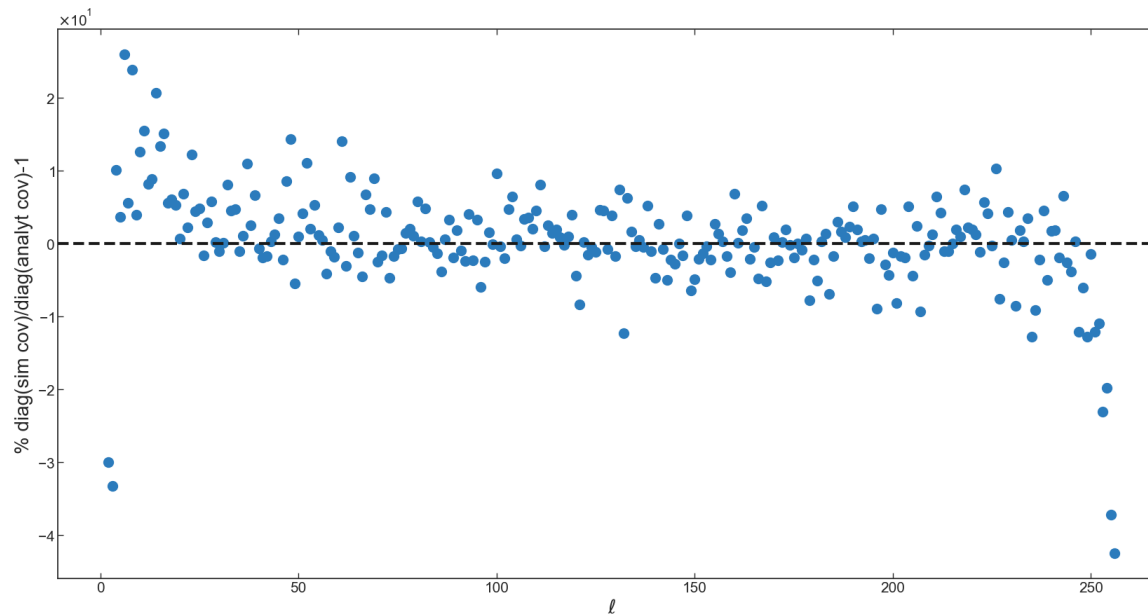
Euclid mask smooth

- $f_{sky} = 0.37$

Map Euclid smooth, $f_{sky} = 0.37$, $N_{side} = 128$

Euclid Mask smooth NEEDLETS $D = 1.59$, $j_{max} = 12$, $\ell_{max} = 256$, $N_{side} = 128$, $f_{sky} = 0.3675944010416667$

Euclid Mask smooth PCL , $\ell_{max} = 256$, $N_{side} = 128$, $f_{sky} = 0.3675944010416667$

Conclusions

- Difference between the diagonal of the simulated and analytical covariance up to 30% for the needlets and PCL estimator in the multipoles $\ell \sim 2,3$;

- The difference decreases with higher f_{sky}, as in the analysis with the Planck mask;

- The difference seems to depend on the geometry of the mask, as the same difference is recovered with a smooth Euclid mask (but the same f_{sky}).