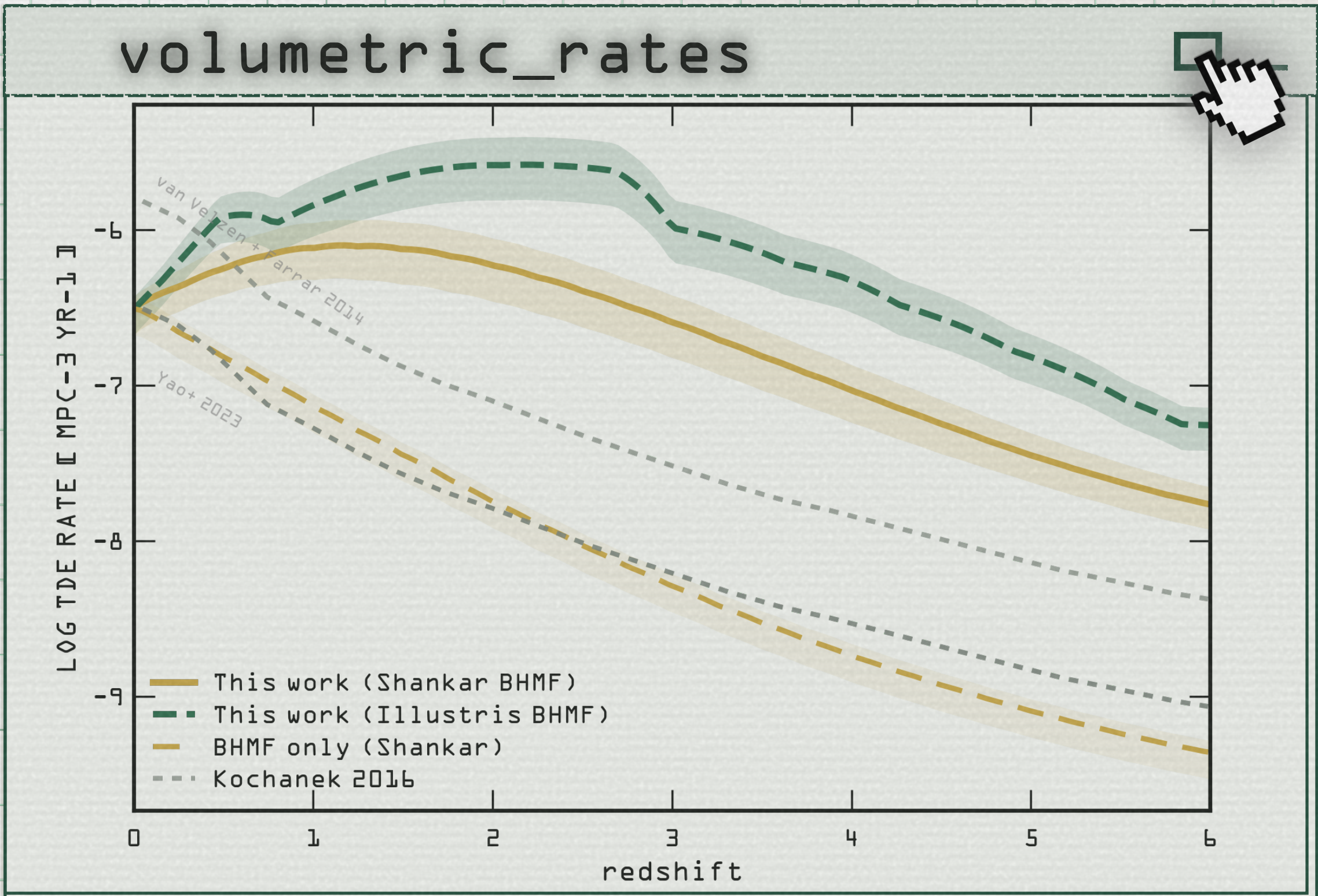


Tidal disruption events across redshift in Rubin and Roman

- New redshift-dependent TDE rate calculations
- > forecasts for upcoming surveys
- > measurements of the black hole mass function (BHMF)



==== ingredients ====

$\dot{N}_{\text{TDE}}(z) = R_0 \times \Phi(z) \times E(z) \times O(z)$

> R_0 -> local ZTF rate (Yao+ 2023)

> $\Phi(z)$ -> Black hole mass function

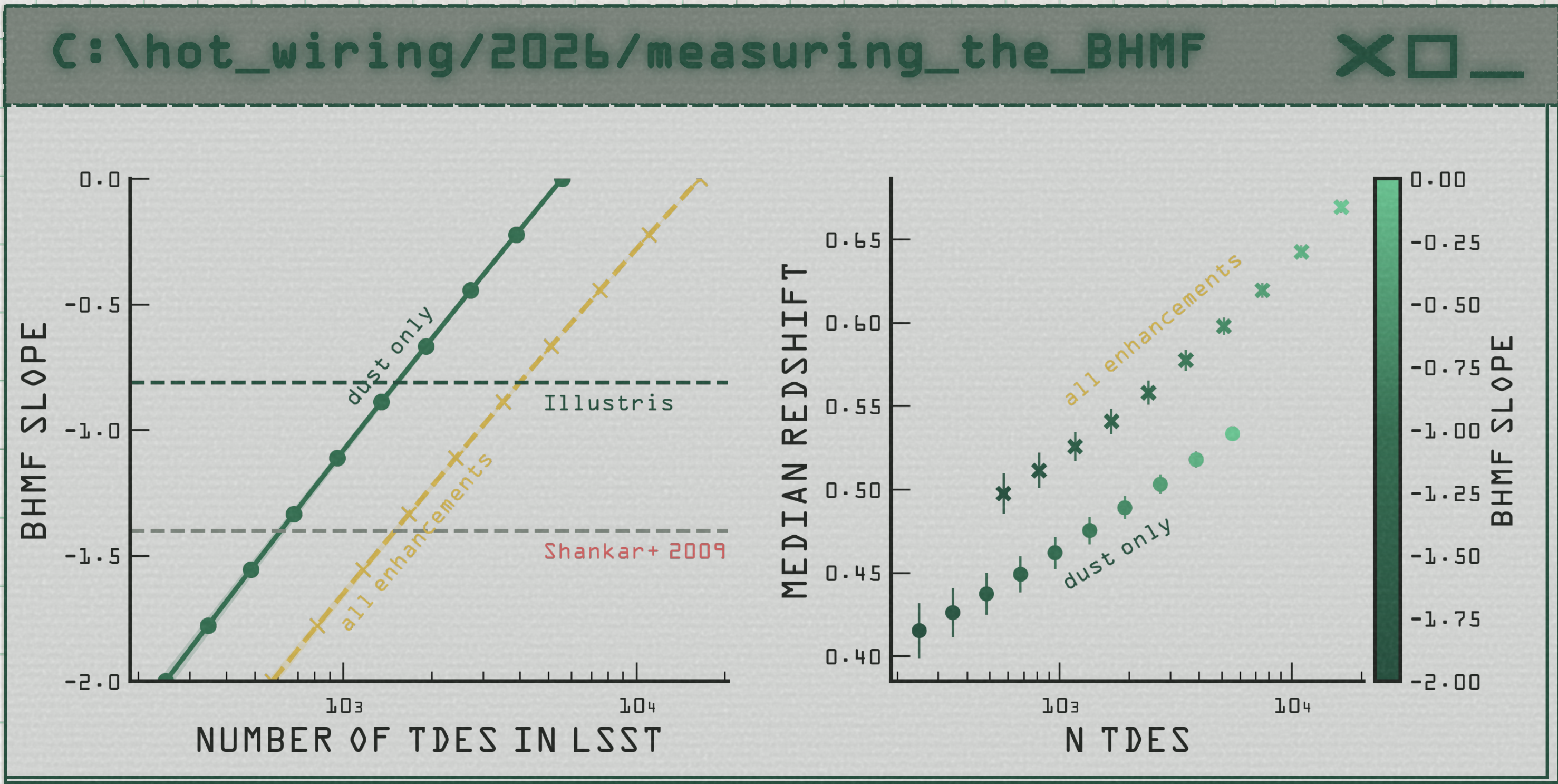
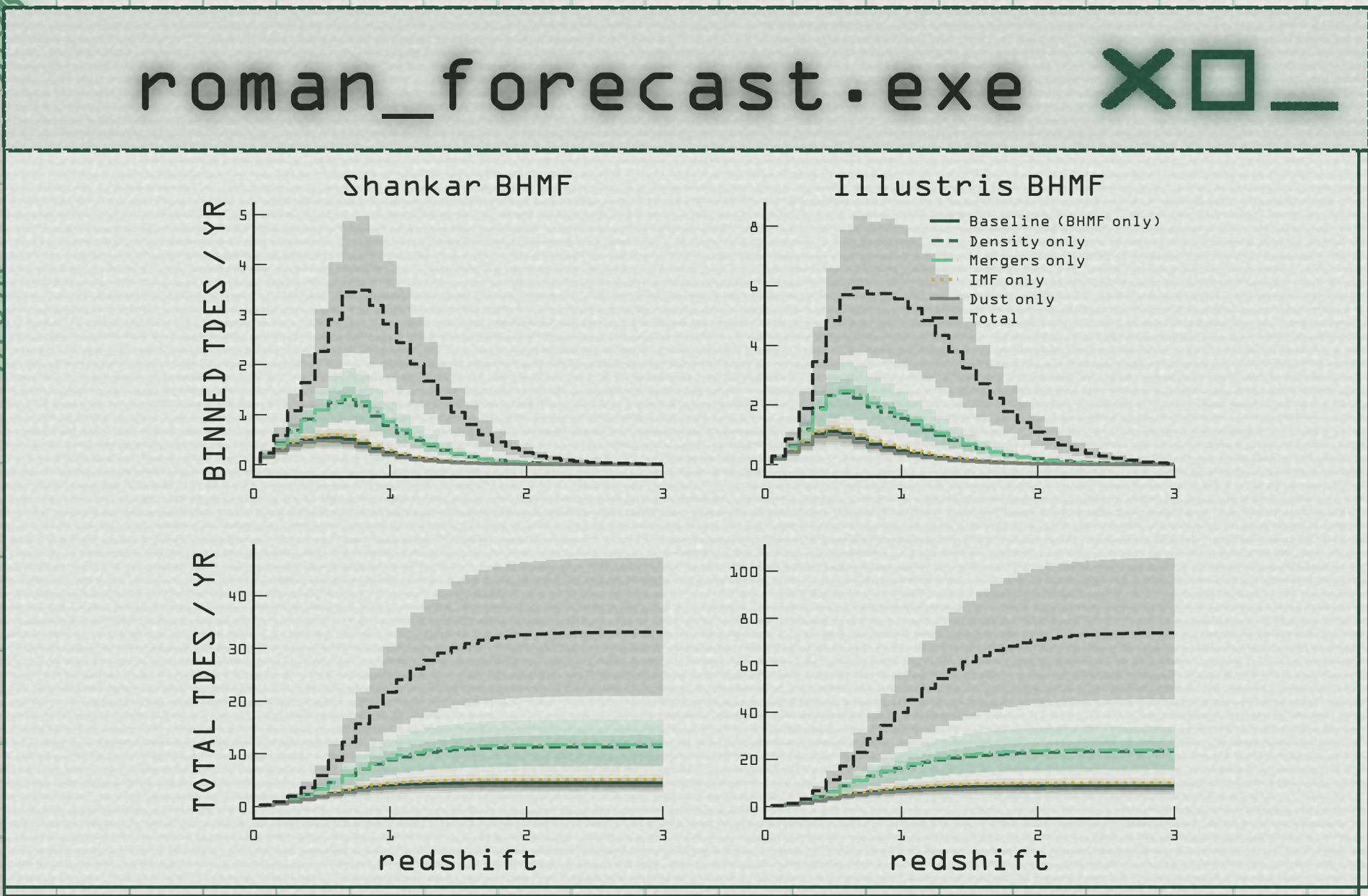
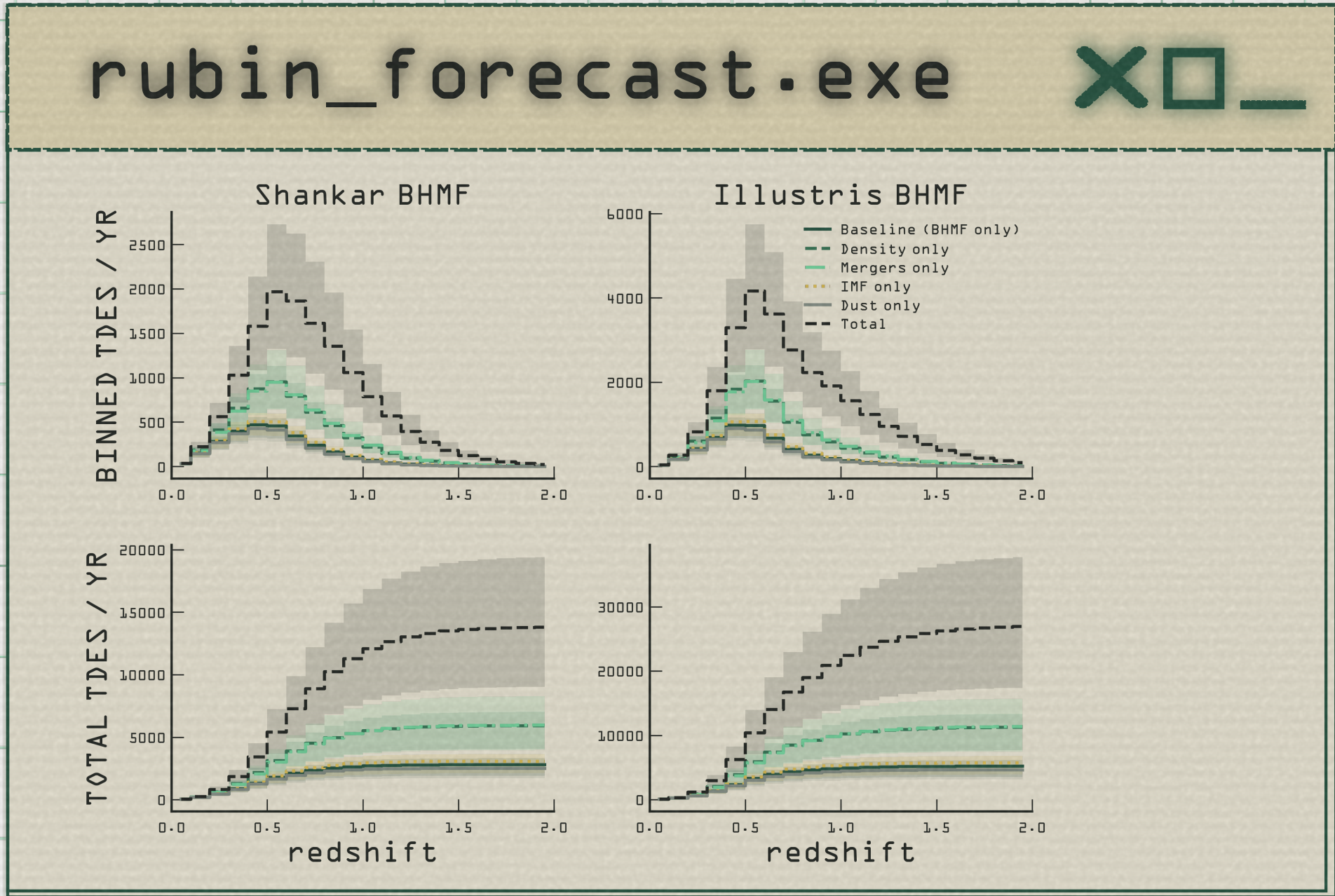
> $E(z)$ -> Host galaxy enhancements

> $O(z)$ -> Dust obscuration

INFO

At higher redshifts:

- > Galaxy nuclei have higher stellar densities
- > Galaxy major mergers are more frequent
- > The IMF may be top heavy which all enhance the rate of TDEs!



INFO

> We can measure the "slope" of the black hole mass function ($d\log N/dz$) using both the number and redshift distribution of TDEs in LSST!

USER PROFILE

Mitchell Karmen

> NSF GRFP Fellow

> Johns Hopkins University

co-authors:

- > Suvi Gezari (UMD)
- > Muryel Guolo (JHU)