

Cosmology with UV Luminosity Functions

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In collaboration with:

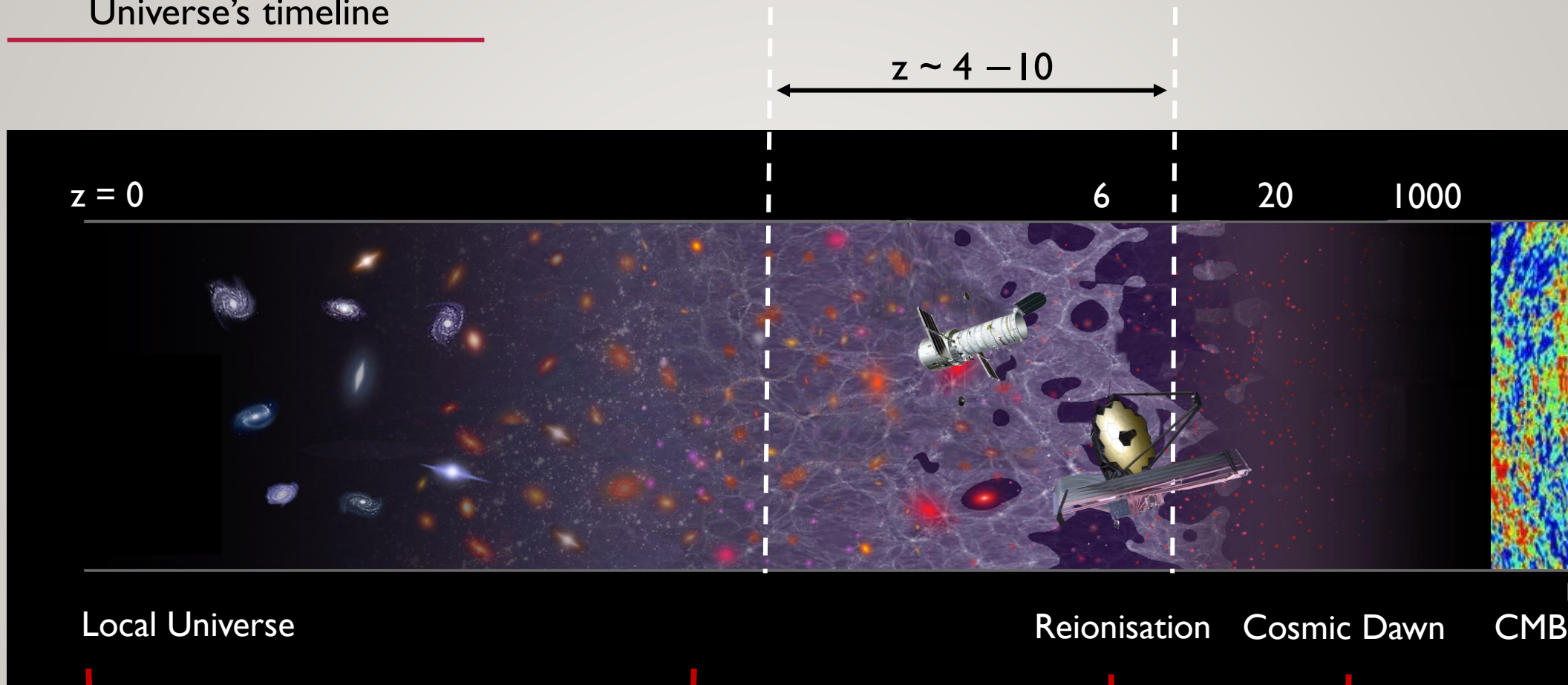


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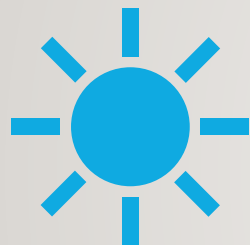
Universe's timeline



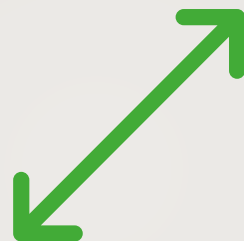
see Hector's talk
@14h CET

see Julian's talk
@15h30 CET

THE UV LUMINOSITY FUNCTION



High-redshift galaxies contain young stars that emit UV radiation

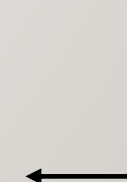


UV radiation redshifts due to expansion of Universe



UV emission is observed today with, e.g., Hubble Space Telescope

Obtain abundance of galaxies as a function of their luminosity/magnitude

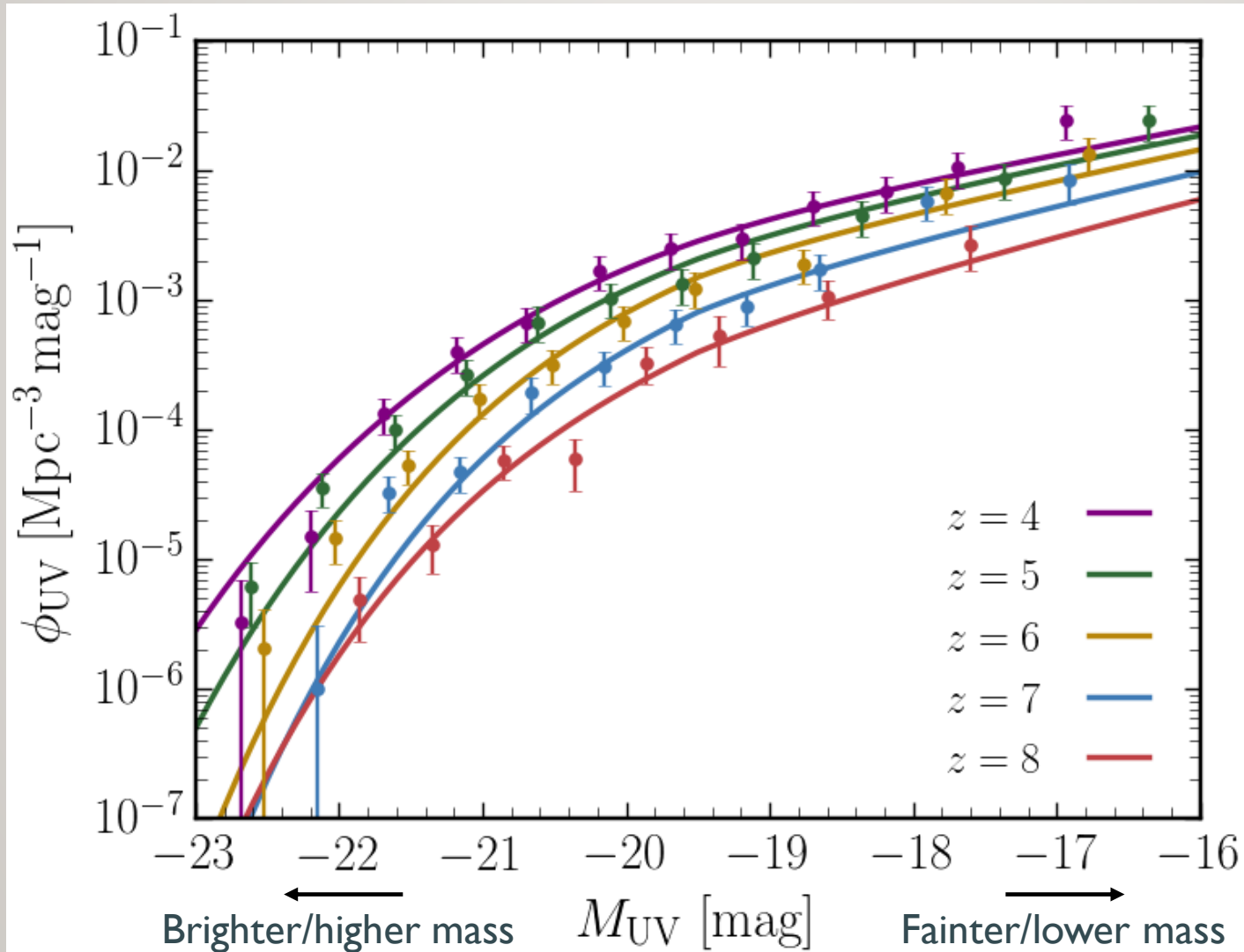


THE UV LUMINOSITY FUNCTION

$$\phi_{\text{UV}} = \frac{dn}{dM_{\text{UV}}} = \frac{dn}{dM_{\text{h}}} \times \frac{dM_{\text{h}}}{dM_{\text{UV}}}$$

The diagram illustrates the decomposition of the UV luminosity function into two main components. The equation $\phi_{\text{UV}} = \frac{dn}{dM_{\text{UV}}} = \frac{dn}{dM_{\text{h}}} \times \frac{dM_{\text{h}}}{dM_{\text{UV}}}$ is shown at the top. The term $\frac{dn}{dM_{\text{h}}}$ is circled in red, and a red arrow points from it to a red-bordered box labeled "Halo mass function". Below this box, a red arrow points to the word "Cosmology". The term $\frac{dM_{\text{h}}}{dM_{\text{UV}}}$ is circled in blue, and a blue arrow points from it to a blue-bordered box labeled "Halo-galaxy connection". Below this box, a blue arrow points to the word "Astrophysics".

INTERESTING PHYSICS WITH UV LFS



- Dark matter (e.g. Rudakovskiy+2021, Menci+2017, Corasaniti+2016, Schultz+2014)
- Neutrino masses (Jose+2011)
- Non-Gaussianities at small scales (Sabti, Muñoz, Blas (2020))
- Halo clustering at high z (σ_8 , $D(z)$, P_k) (coming up!)

MANY OPPORTUNITIES WITH UV LFS

- Exciting physics that can be probed with UV LFs!
- Comments and discussions welcome!