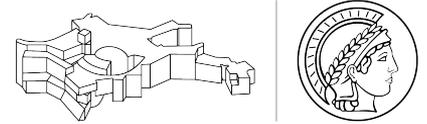


Effects of Supernova Feedback on Lyman alpha in high-z galaxies

Elie Cueto
2nd recap online collaboration meeting
January 23rd 2026



MAX PLANCK INSTITUTE
FOR ASTROPHYSICS



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the European Union



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Disposition

- Background: The SPICE simulations
- The Ly- α RT simulations
 - Ly- α spectra
 - Comparing the models

SPICE simulations

RHD Cosmological simulations for the EoR

Multiple simulations with different SN feedback modelling

Bursty Model

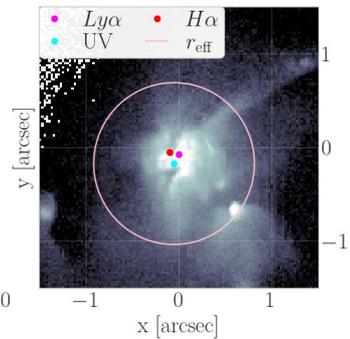
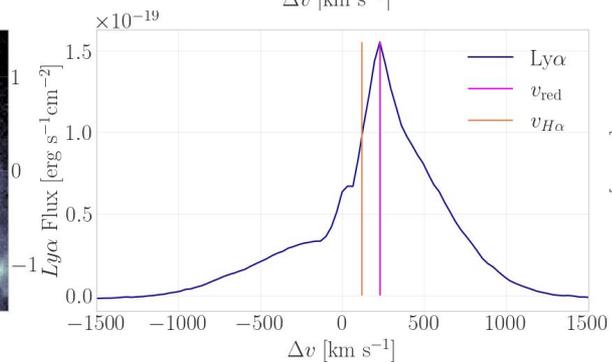
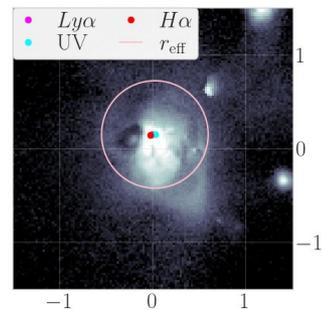
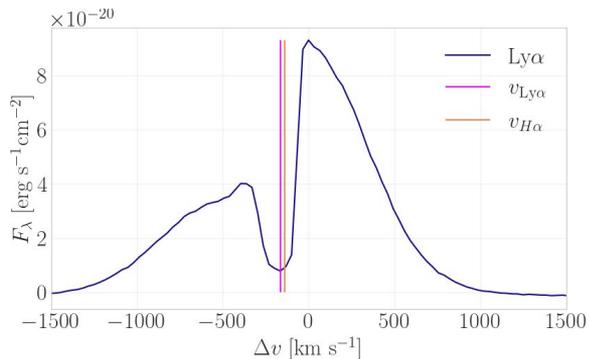
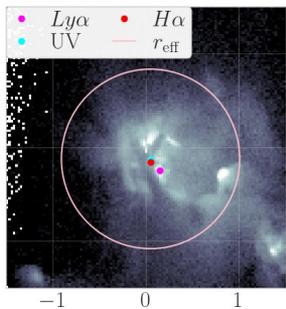
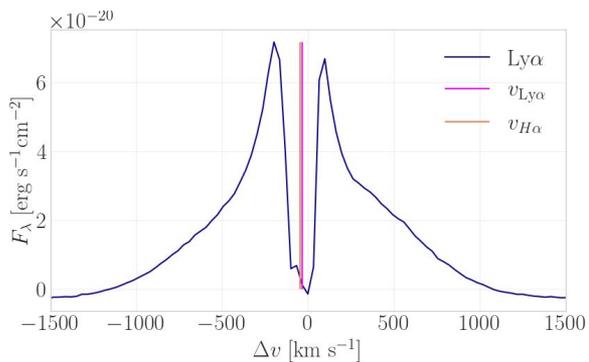
- All SN feedback occurs 10 Myr after star formation
- Ly α RT for ~ 200 halos so far

Smooth Model

- SN feedback occurs $\sim 3-40$ Myr after star formation according to stellar lifetimes
- Ly α RT for ~ 450 halos so far

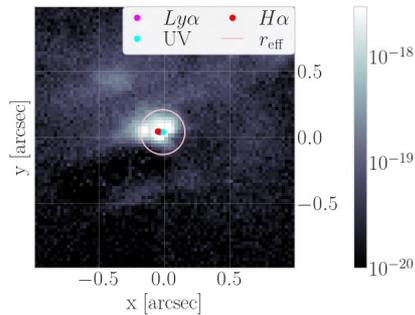
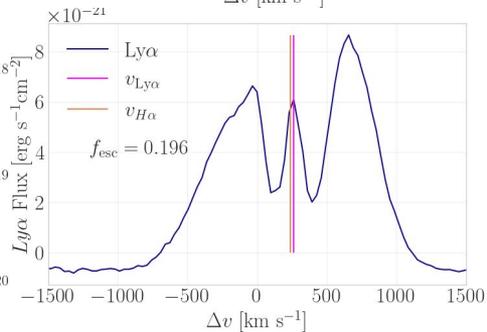
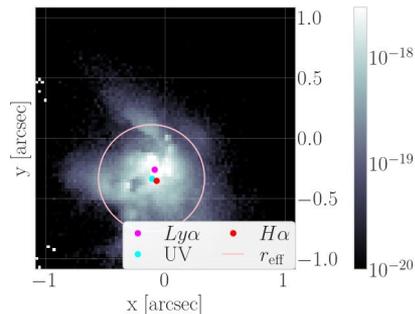
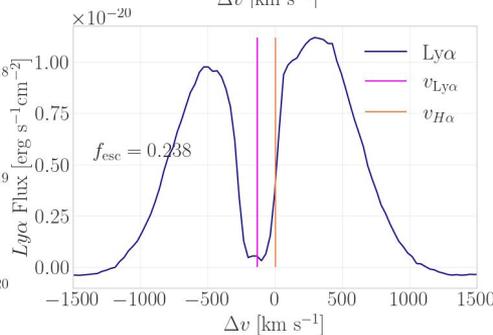
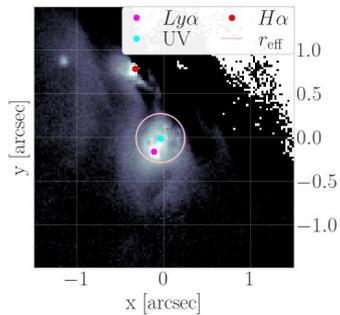
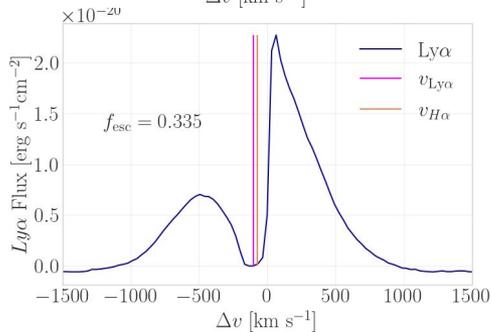
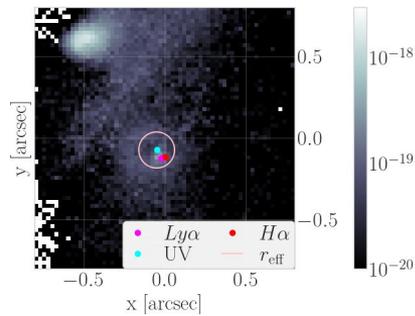
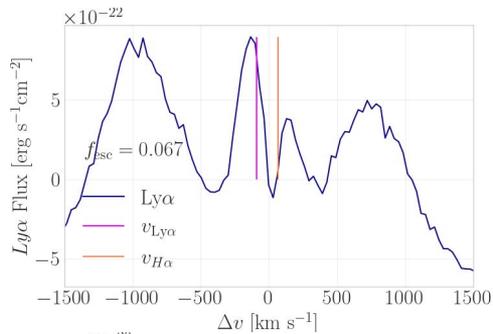
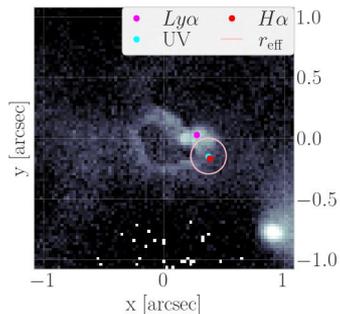
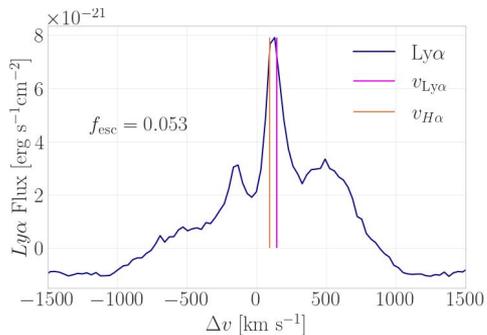
Ly- α RT simulations

Variability of spectral shapes with direction



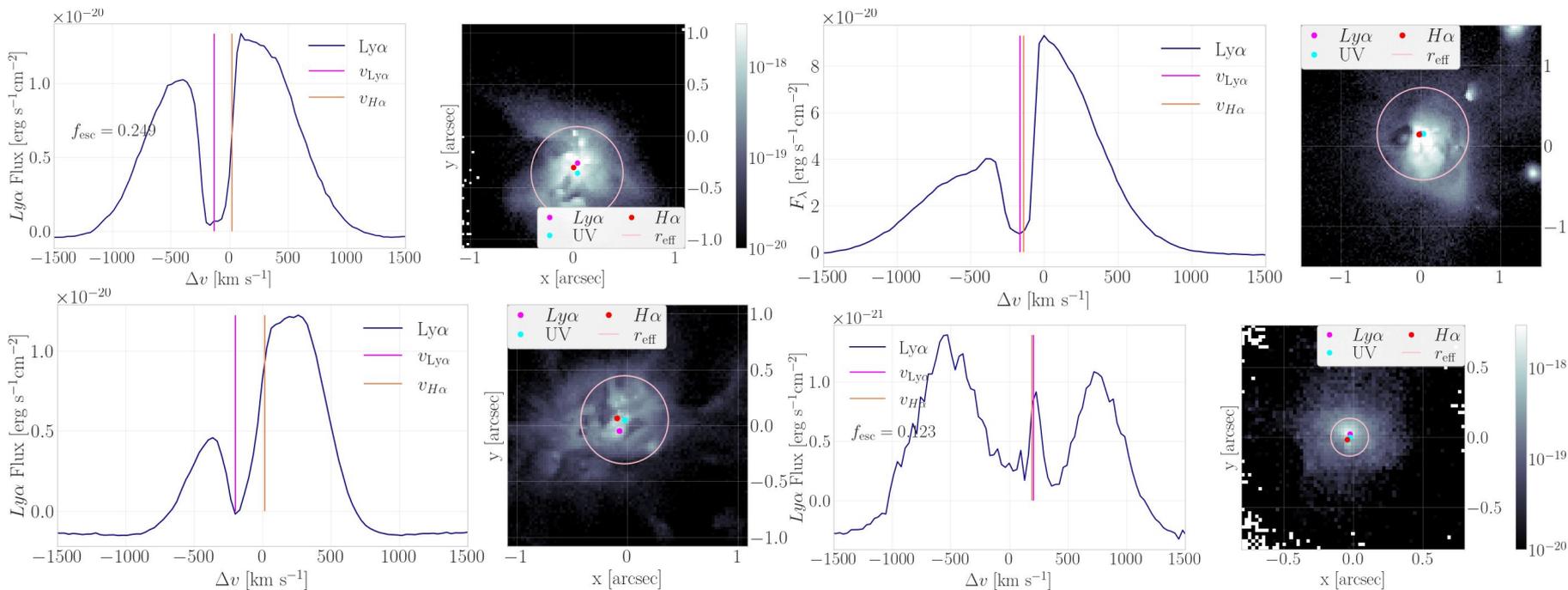
Ly- α RT simulations

Various spectral shapes



Ly- α RT simulations

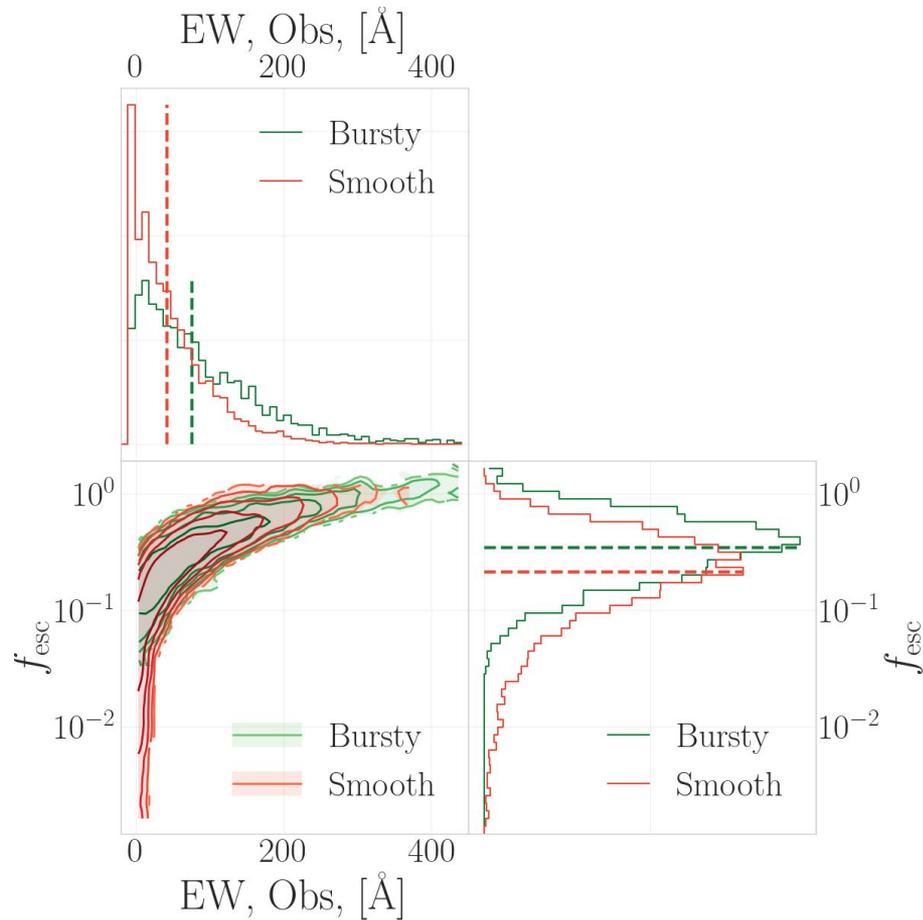
Velocity offset between H- α and Ly- α



Comparing Models

Escape fractions / Equivalent widths

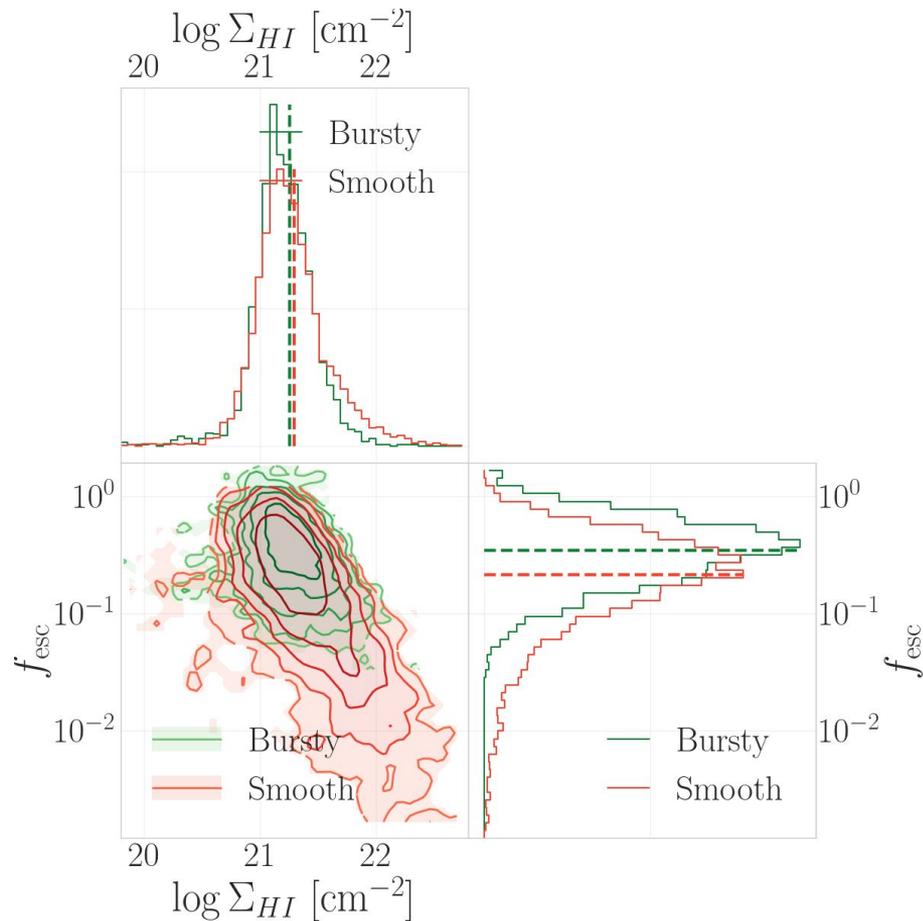
Another one where the models differ significantly



Comparing Models

Escape fractions / Column densities

Another one where the models differ significantly



Comparing Models

Blue-to-red peak ratios and peak separation

