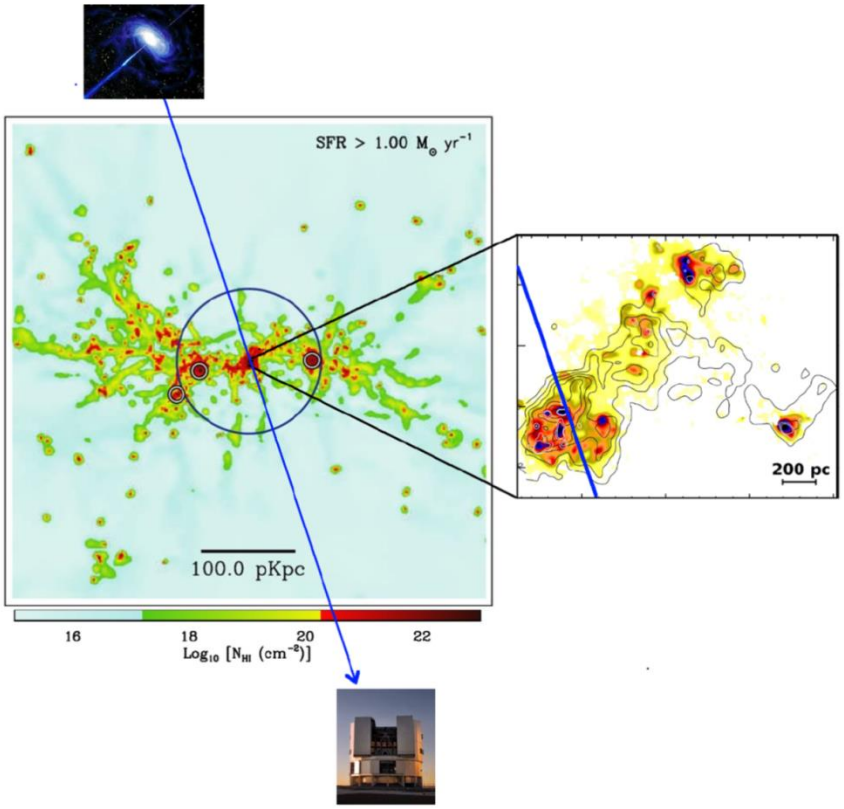
# Interstellar UV radiation field in high redshift galaxies probed by Damped Lyman Alpha systems

Klimenko V.V., Balashev S.A.

Ioffe Institute, Saint-Petersburg

We study ISM of distant galaxies at high redshift z~2-4 in absorptions detected in quasar spectra




DLA systems

- N(HI) > $2\times10^{20}$ $cm^{-2}$
- high redshift z> 2
- Main reservoir of neutral gas

$H_2$ absorption systems

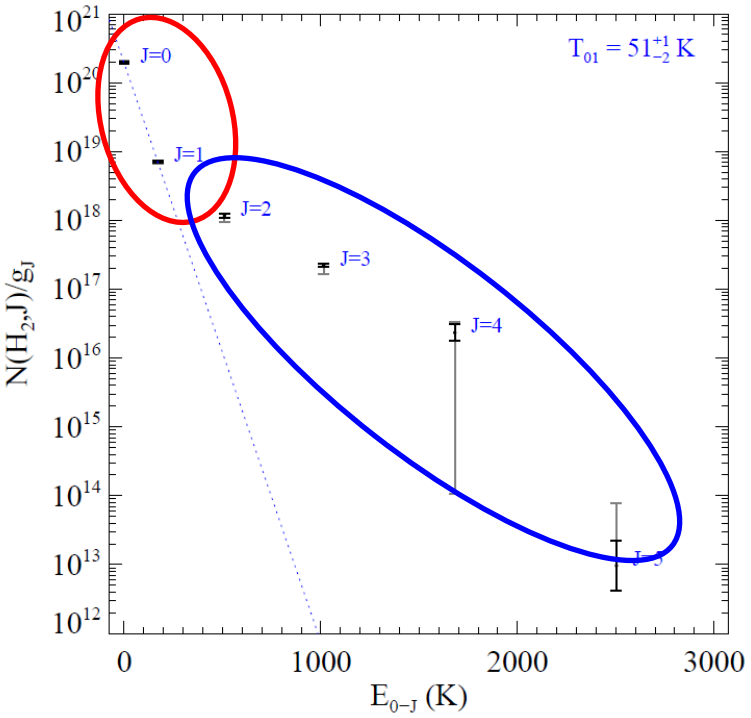
- Detected in 5% of DLAs
- Diffuse molecular clouds
- Cold phase of ISM

We analyse the excitation of $H_2$ rotational levels in DLAs

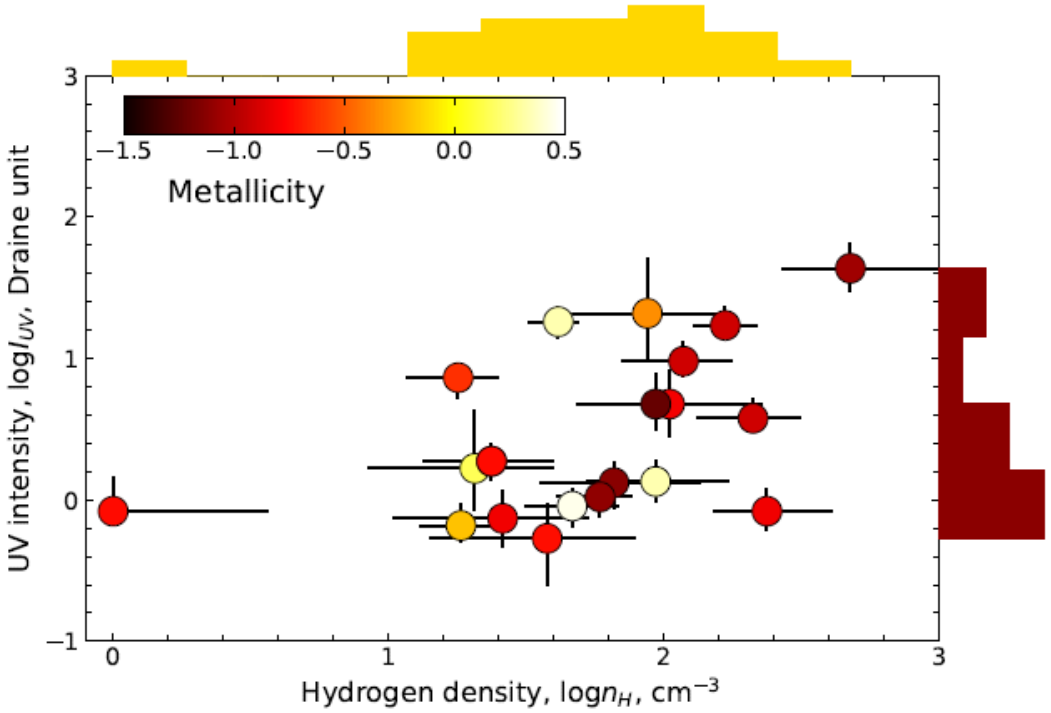
There are 2 mechanisms of excitation:

- T01 – Thermal balance: UV heating vs Me colling
- T2-3-4-5: UV pumping

H2 excitation diagram




Final results:




We found that on average H2 clouds in DLAs at high redshifts are characterized by a **higher** value of the intensity of interstellar **UV field** **3-10 times** compared to **Draine** field