

# High-redshift Quasar Survey with IMS

Kim, Y., et al. 2015, ApJ, 813, L51  
Kim, Y., et al. 2018, ApJ, submitted

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Team<sup>1</sup>**

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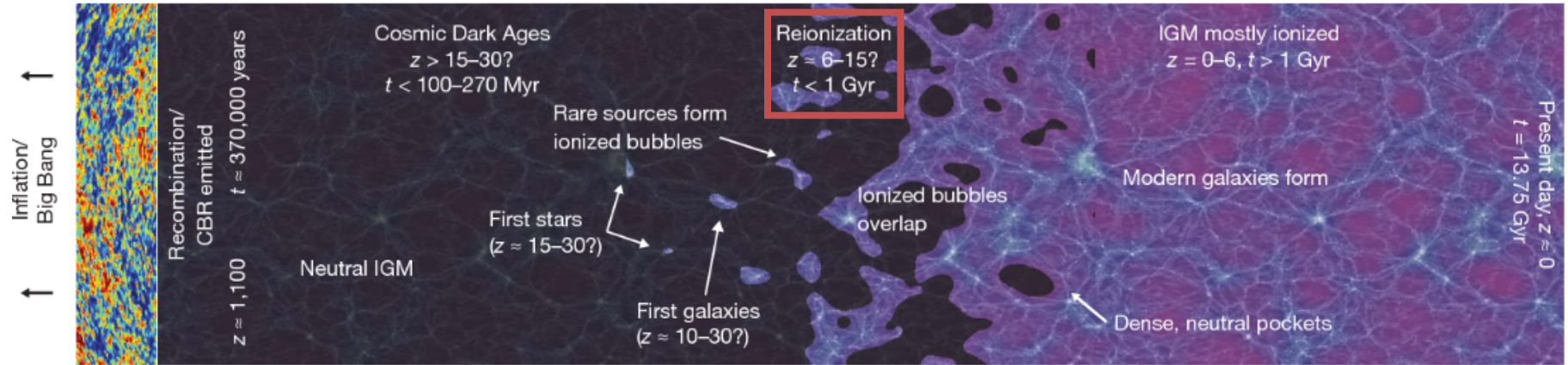
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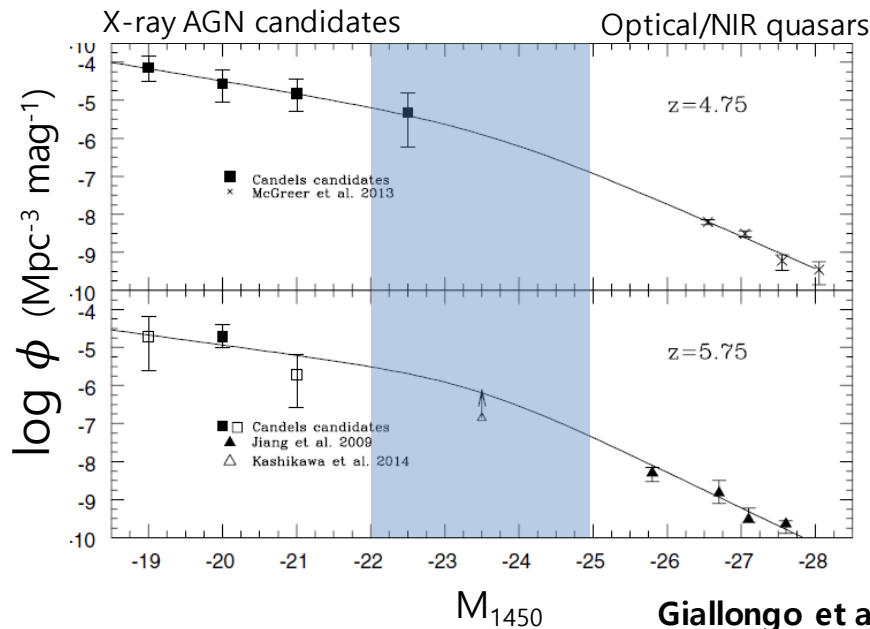
# High-redshift Quasars

## • Cosmic Reionization

- Which objects can fully ionize the neutral hydrogens?



Robertson et al. (2010)



Giallongo et al. (2015)

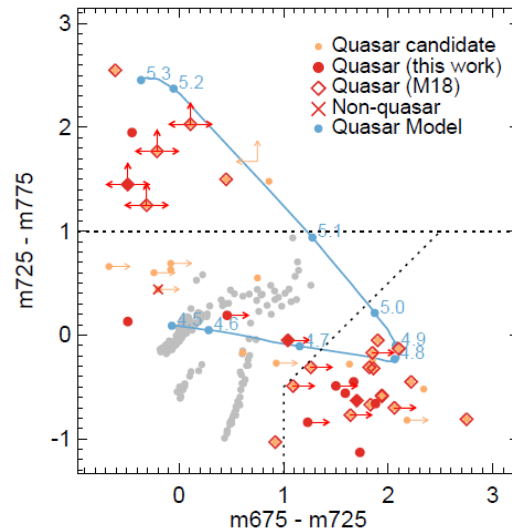
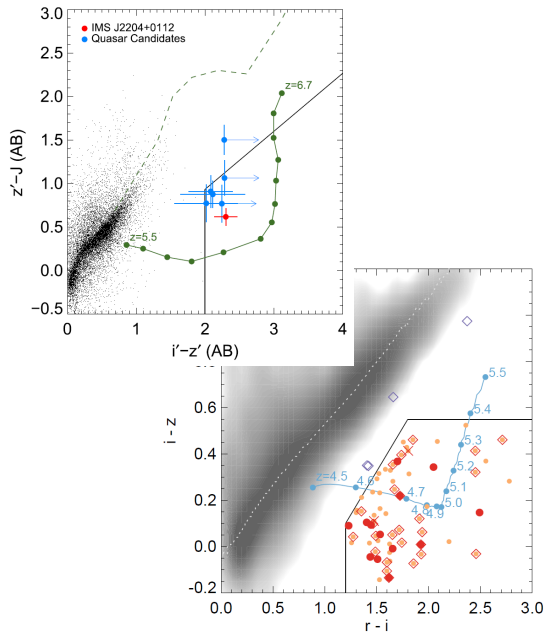
UV emissivity:  $\epsilon \propto \phi \times L$   
 $\phi$ : QLF  $L$ : Luminosity

Maximum at  $M_{1450} \sim -23.5$  mag

Lack of Quasars  
 $(-25 < M_{1450} < -22)$

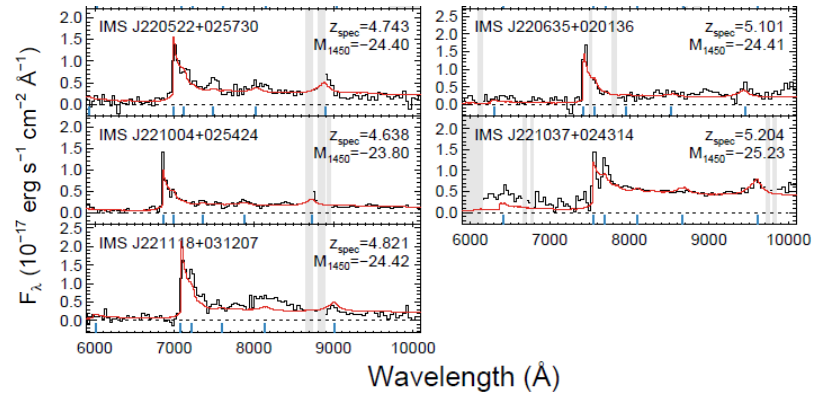
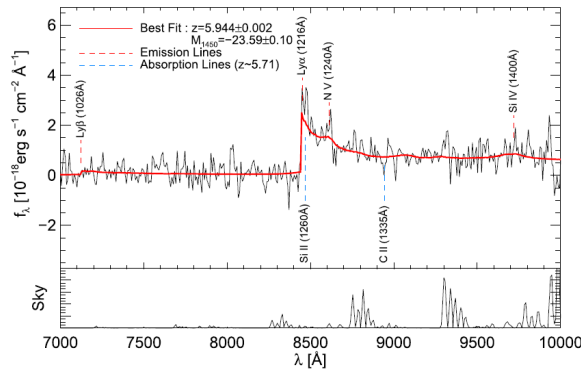
# High-redshift Quasar Survey with IMS

- **Infrared Medium-deep Survey (IMS; M. Im et al, in prep)**
  - Near-infrared imaging survey using WFCAM on UKIRT
  - 120 deg<sup>2</sup>, 5 $\sigma$  depth of J<sub>AB</sub>~23 mag
  - Overlapped with optical data from CFHT Legacy Survey (CFHTLS)
- **Three Steps for Finding Quasars at z~ 5 & 6**
  - Broad-band color selections based on their distinct spectral properties
  - Medium-band observations using SQUEAN on Otto Struve 2.1m Telescope
  - Spectroscopically identification with large telescopes

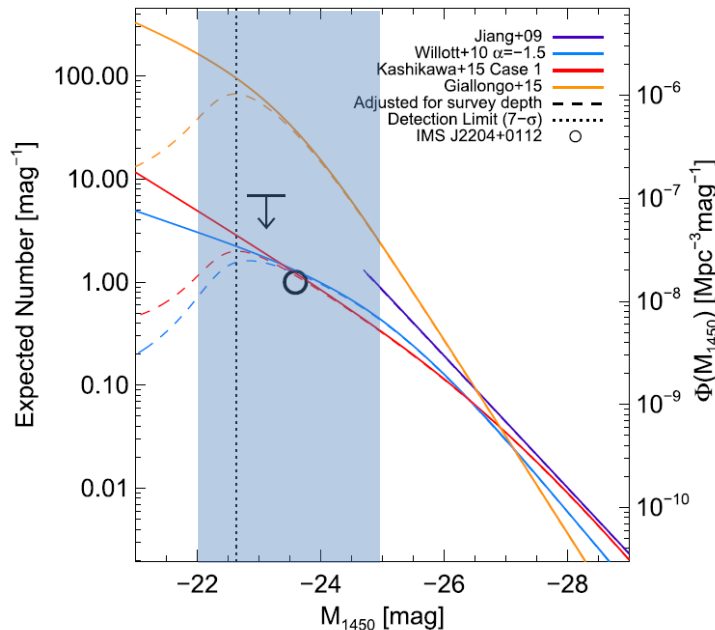


# Discoveries & Implication to Reionization

## • Discoveries of High-redshift Quasars



## • Minor Contribution to Cosmic Reionization



At  $z \sim 6$ , **Less than 15%** of required UV photons from faint quasars ( $-25 < M_{1450} < -22$ )

**QLFs at  $z \sim 5$  & 6  
 Coming Soon!**