Identification of QSOs with SPHEREx

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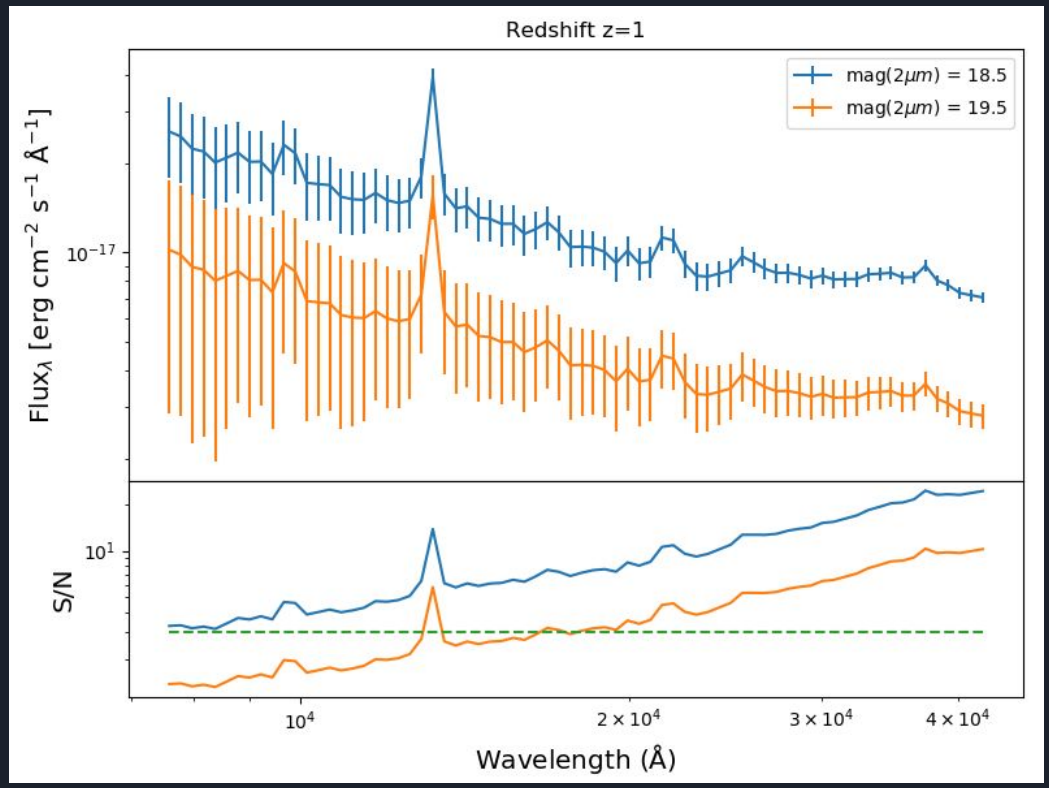
Identification of QSOs using their emission lines

QSO emission lines:

- More luminous than their continuum ⇒ ↑↑ detection
- Improve redshift precision
- Reduce contamination from galaxies and stars

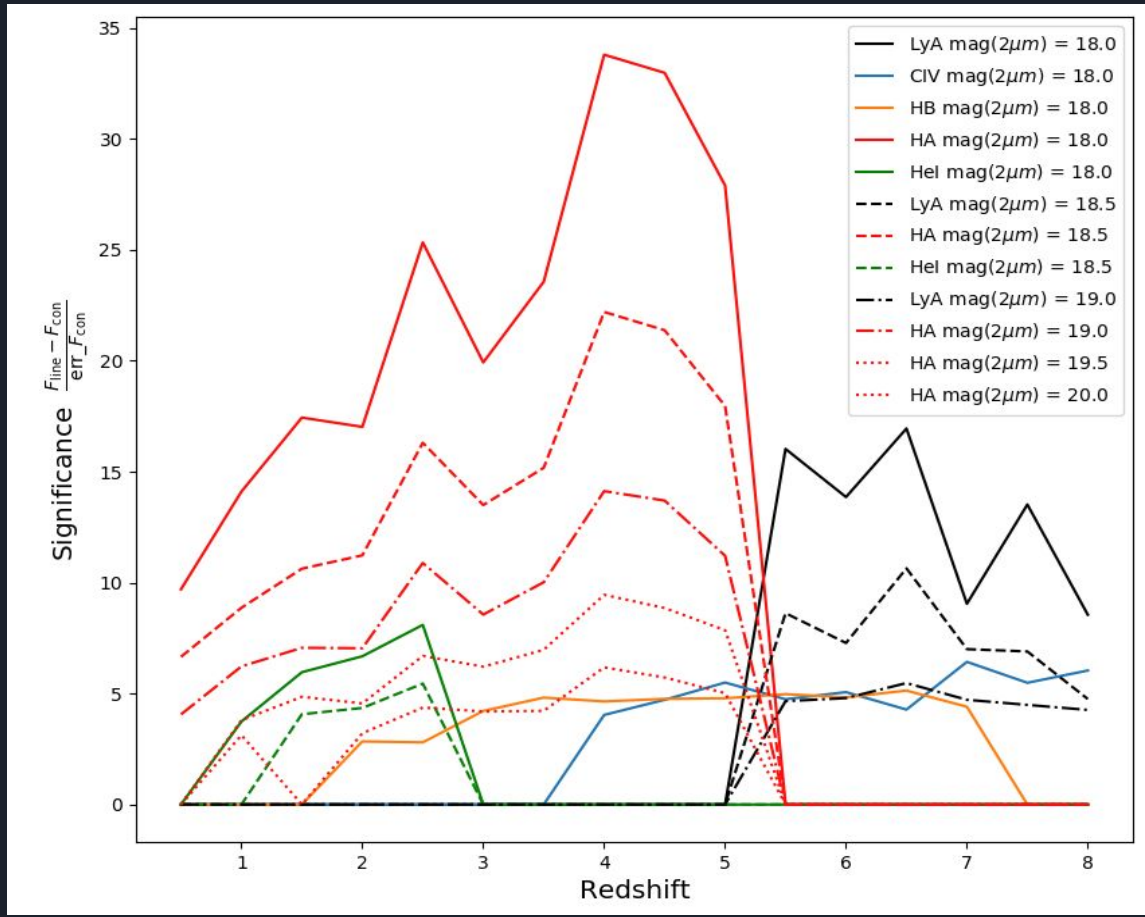
In Chaves-Montero et al. (2017) we introduced ELDAR, an automatic method for identifying QSOs based on the detection of their emission lines



QSO emission lines that SPHEREx will detect

SPHEREx will detect multiple lines with more than 5σ significance:

- Hα for QSOs at z≤5 with mag(2μm)≤20
- Lyα for QSOs at z>5 with mag(2μm)≤19



High redshift QSOs

The QSO luminosity function at z>6 is poorly constrained

Figure: Highest redshift QSOs known (Mortlock et al. 2011, Bañados et al. 2017) as they will be seen by SPHEREx

SPHEREx will detect them