Are LoBAL QSOs young AGN with high accretion rates?

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Based on paper Schulze et al. 2017 subm.
"Near-IR Spectroscopy of Luminous LoBAL Quasars at 1 < Z < 2.5”

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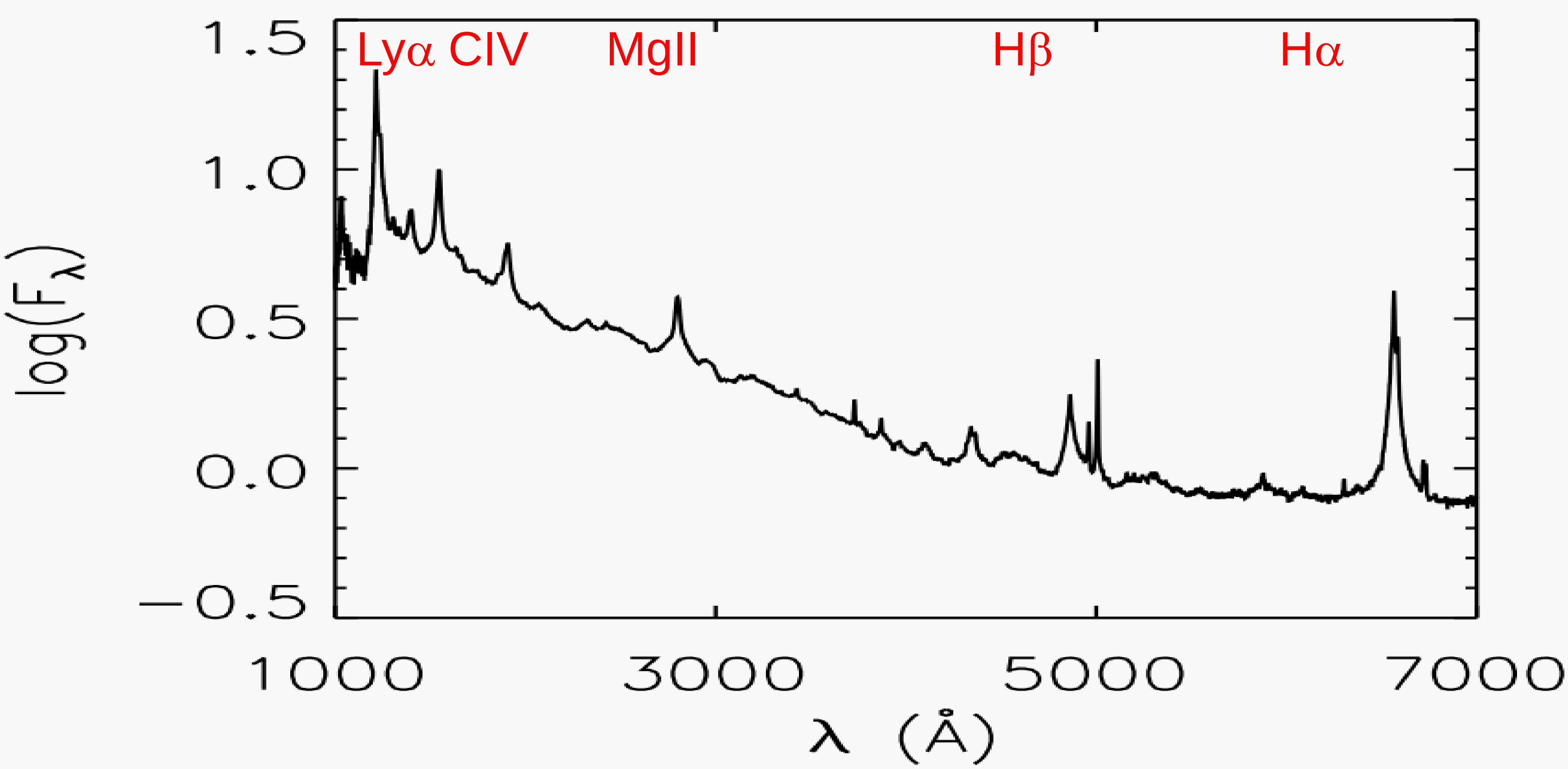
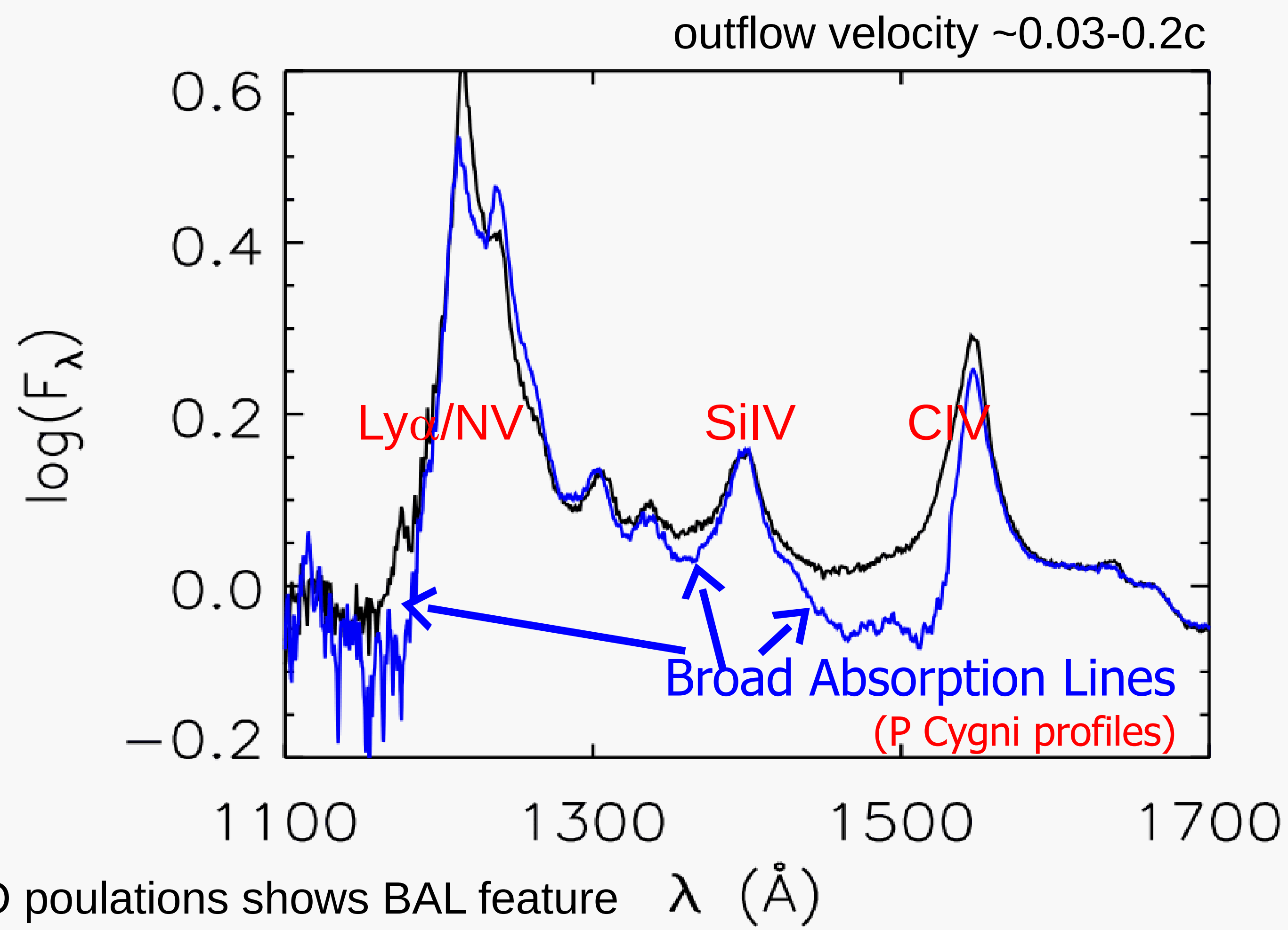
Motivation – normal Quasar



BAL QSOs: Quasars with Outflows



~15% of QSO poulations shows BAL feature
LoBAL 1-3% w/ absorption in Hi&Low Ionization lines

Two Scenarios for LoBALs

- I. The evolutionary scenario suggests LoBALs as a stage when a merger induced, young QSO, enclosed before by a dust rich cocoon and observed as a ULIRG, is ignited and blows out their dust envelope by a strong wind, accreting at a high rate
- II. Orientation effect, i.e. their occurrence is related to the observed line-of-sight

Scenario I implies: LoBAL QSOs should have high accretion rates, i.e. Eddington ratios compared to non-BALs

Sample

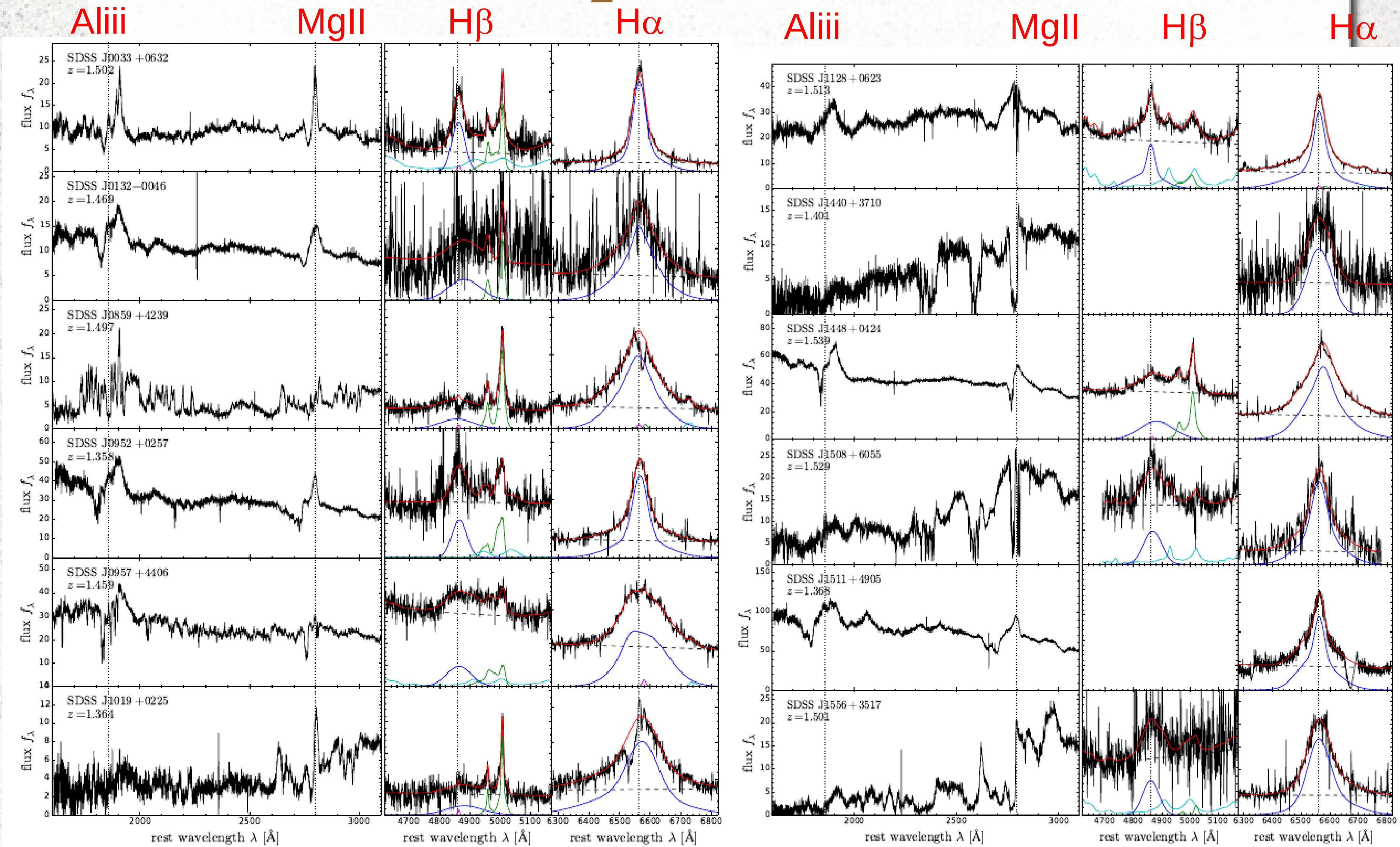
- LoBALs selected from Allen+2011
- $1.32 < z < 1.60$ Hmag<16.7 & BI(Mg II)> 0

  → 22 Objects
- $2.20 < z < 2.50$ Kmag<16.3 & BI(Al III)> 0

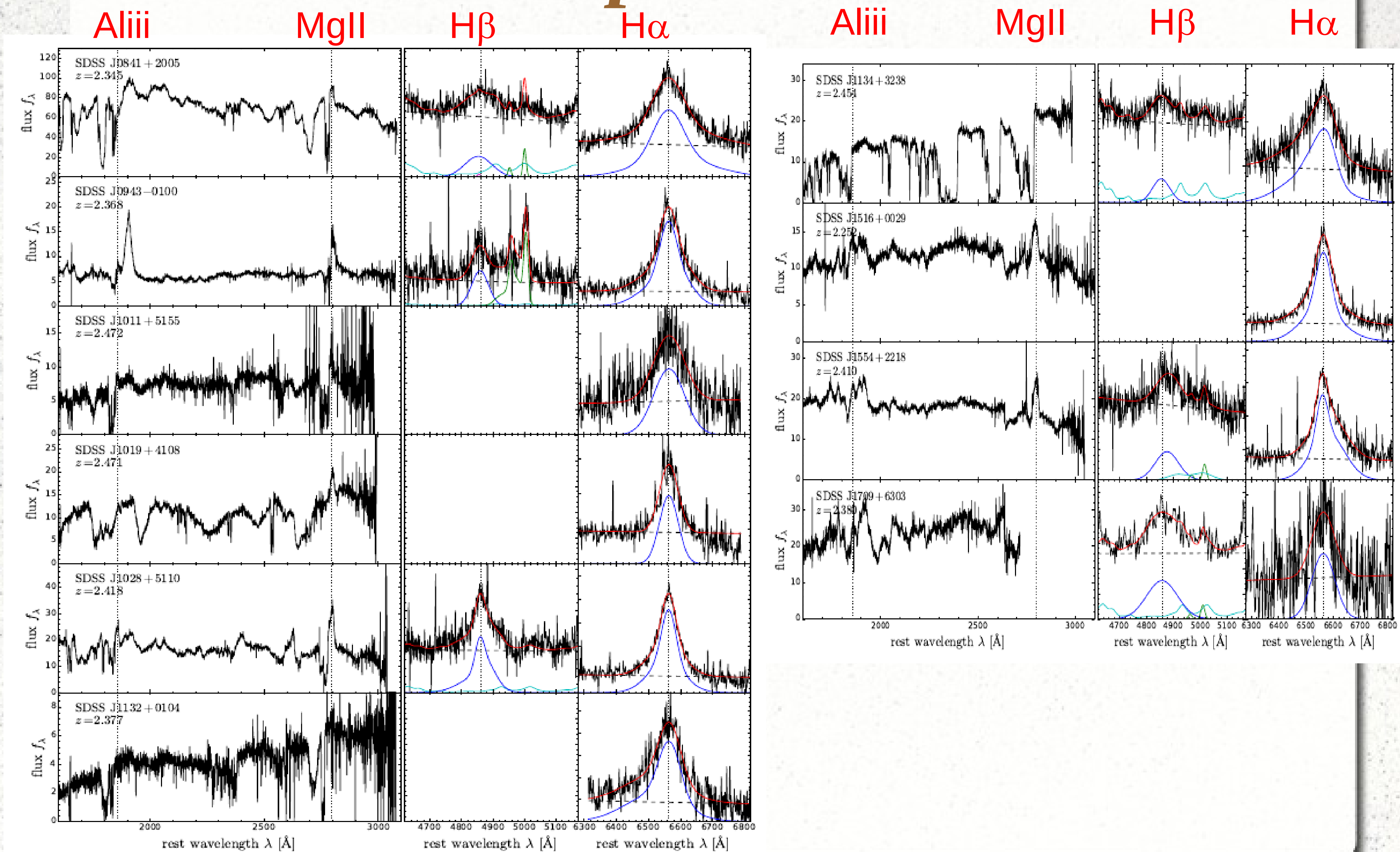
  → 19 Objects
- NIR spectroscopy: 9 TSpec, 6 ISLE, 7 NOT
- 12 observed @ z=1.5 in H-band with TSpec & ISLE
- Additional cut Kmag<15.3 → 10/11 Objects

  observed with ISLE & NOT

NIR Spectra z=1.5

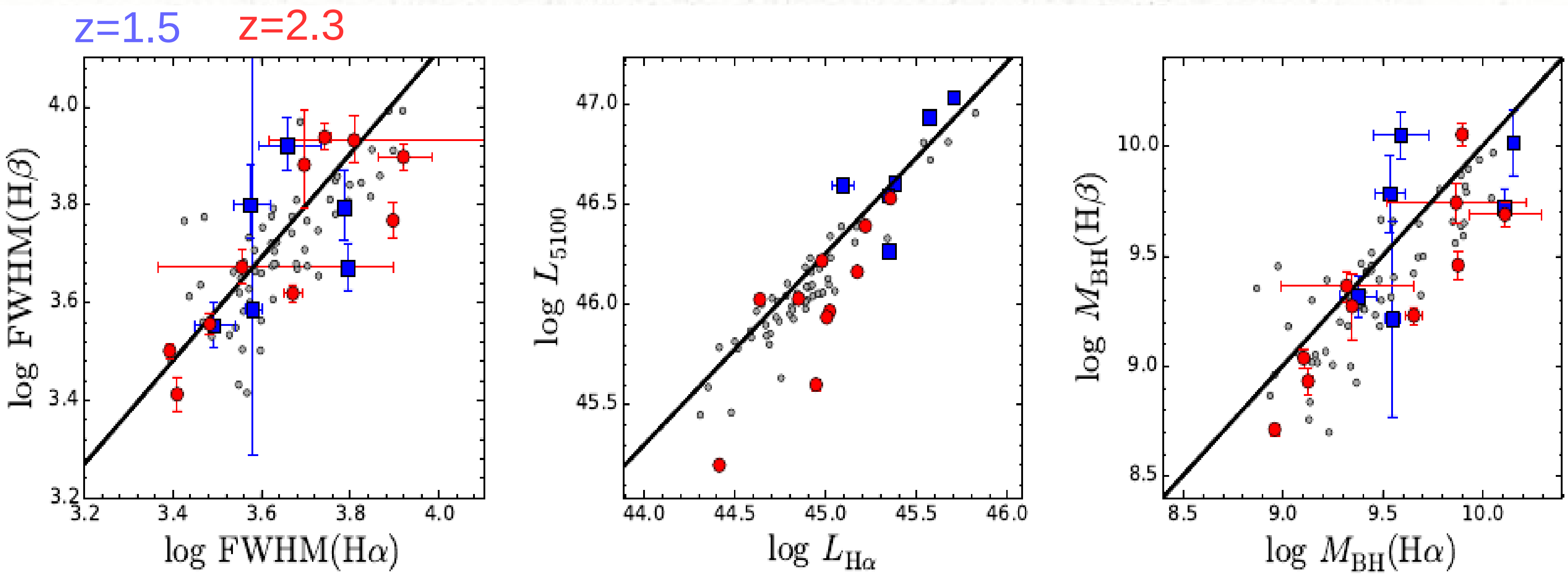


NIR Spectra z=2.3



AGN Line Properties

- LoBAL & non-BAL QSOs show no significant difference



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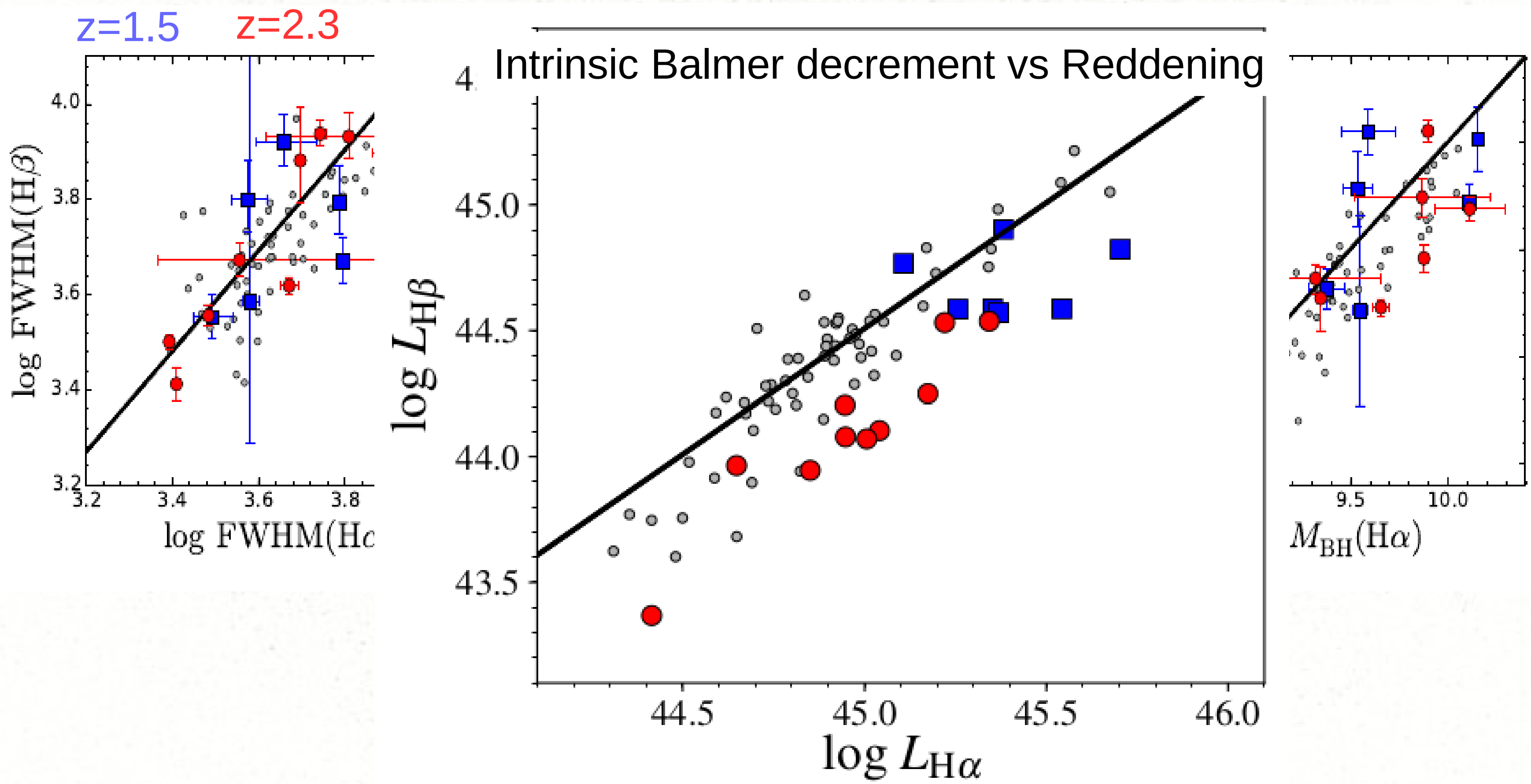
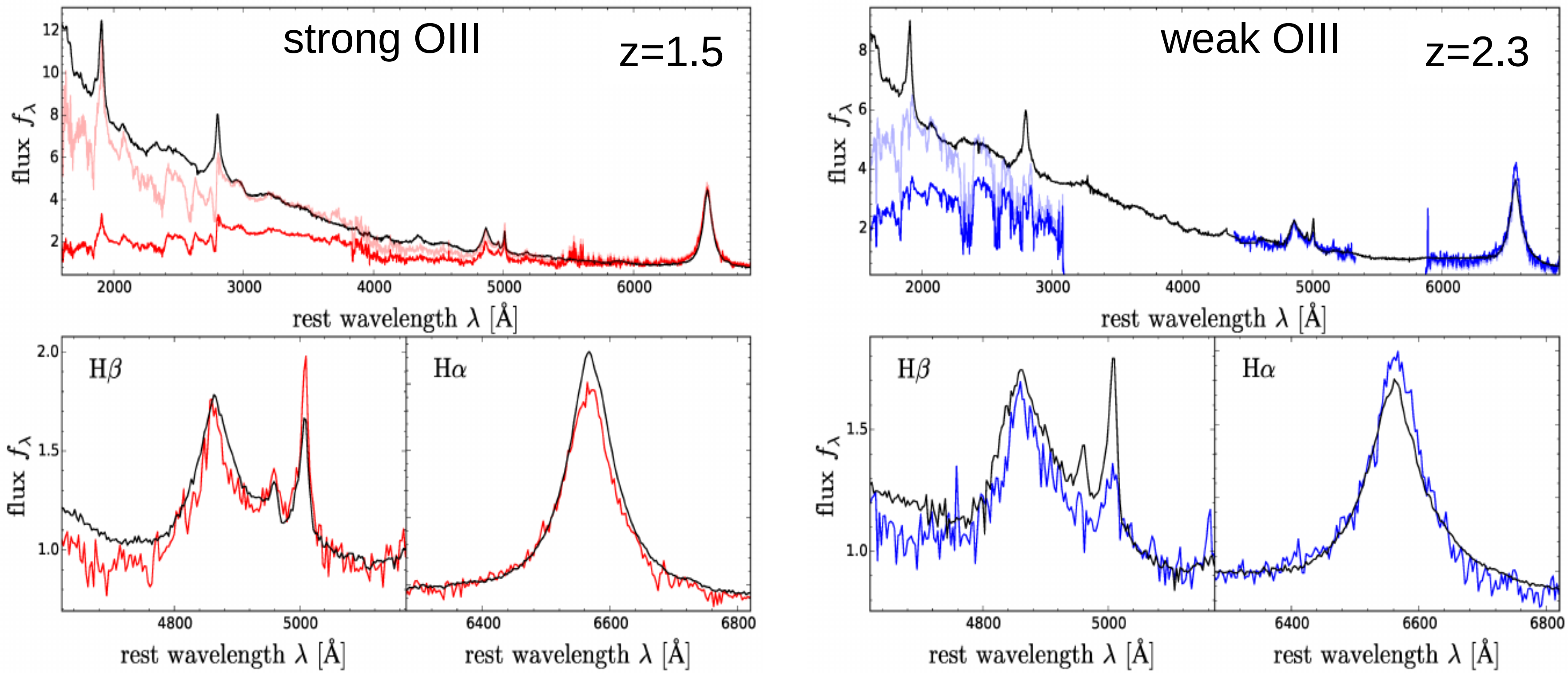
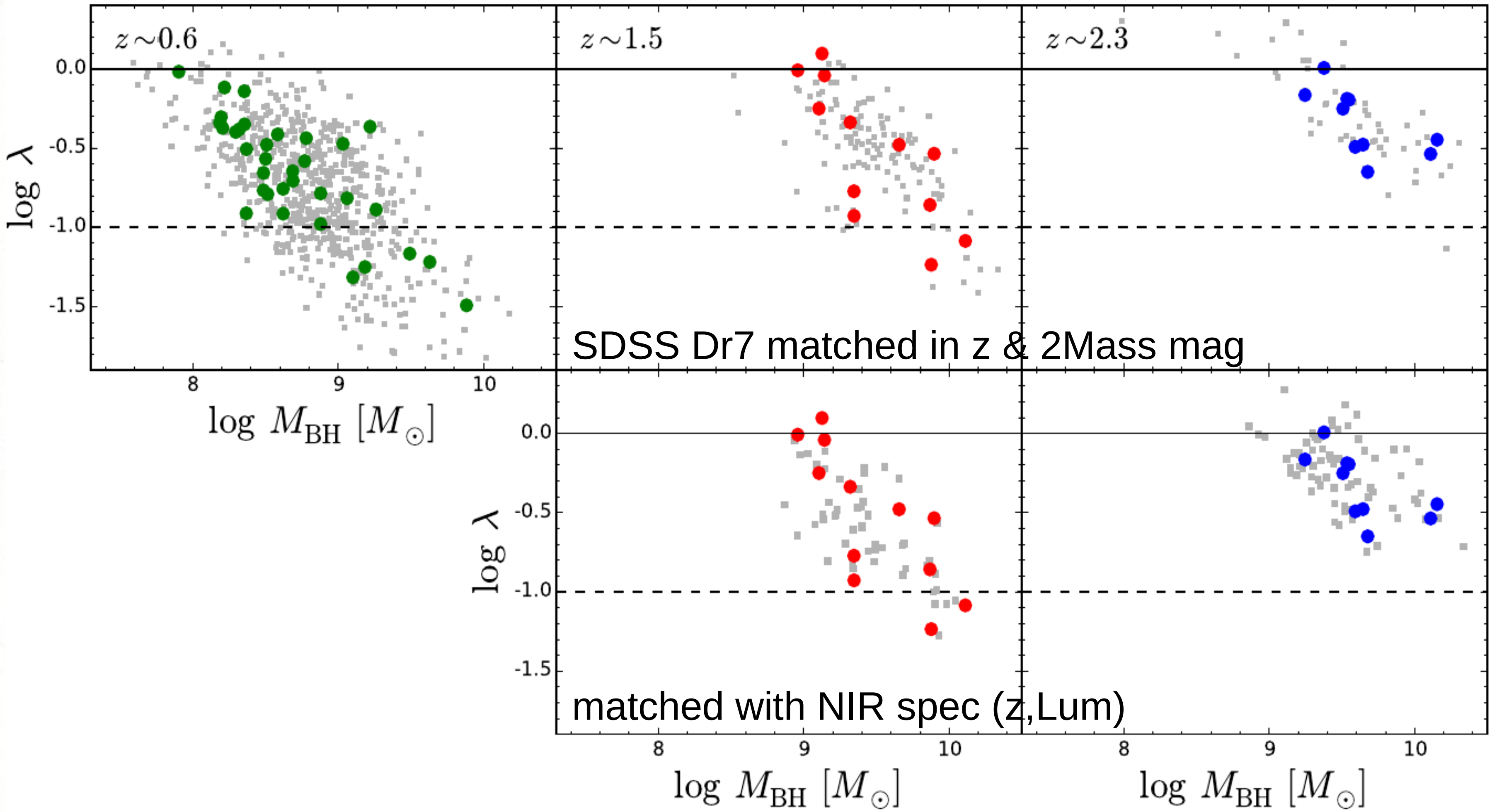


AGN Line Properties II

- No direct conclusions on OIII (low No. stat)



BH Mass vs. Eddington Ratio Distribution



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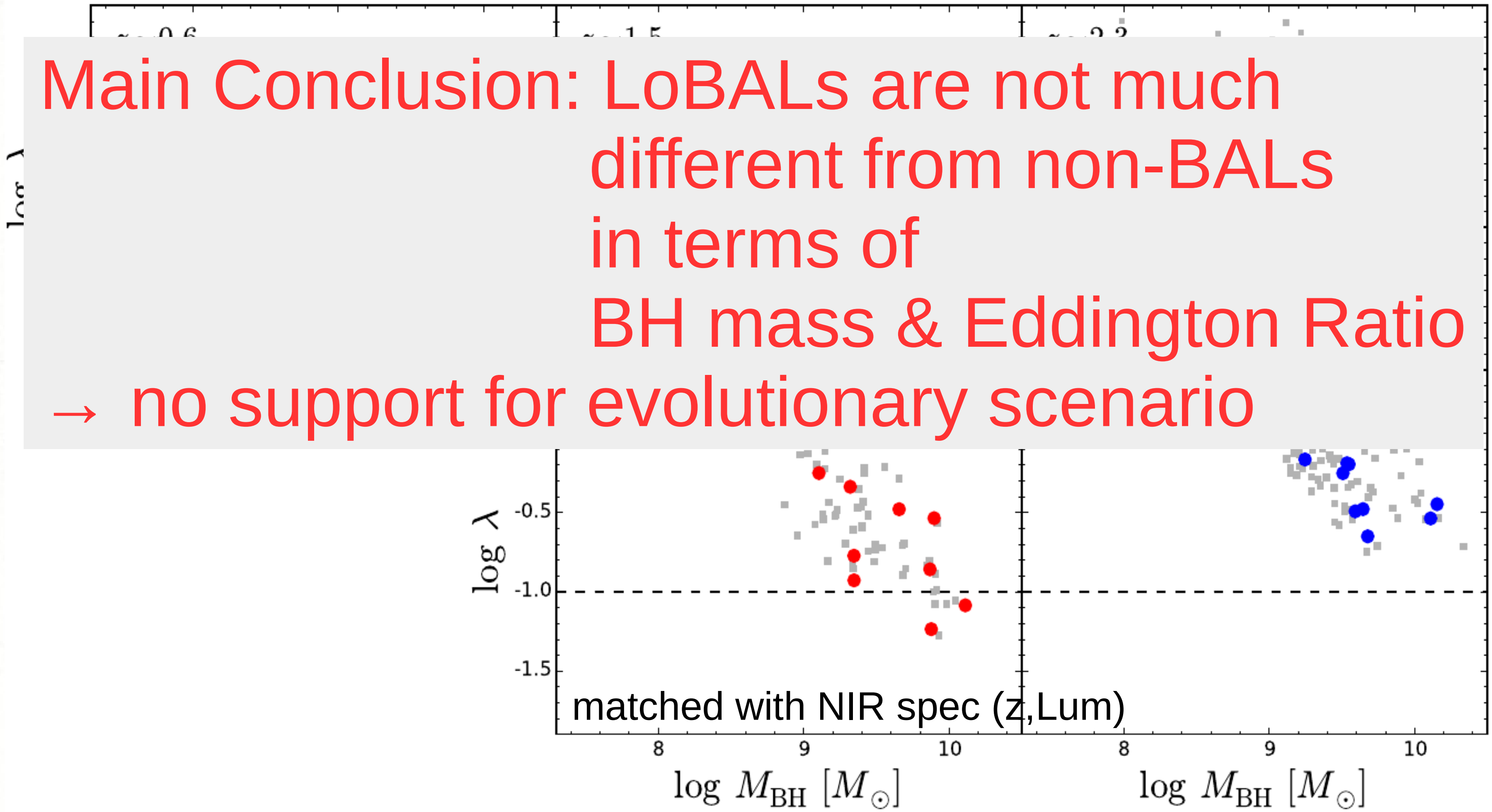

Main Conclusion: LoBALs are not much different from non-BALs in terms of BH mass & Eddington Ratio

→ no support for evolutionary scenario

Future Outlook

- 7 Lobals at z=2.3 with Herschel SPIRE data to probe star-formation (very different observed FIR luminosities)
- Test Co-Evolution Scenario by observing the host galaxies with Adaptive Optics
- Detailed Study of the Balmer absorption Objects (2 @ z=1.5, 1 candidate at z=2.3)