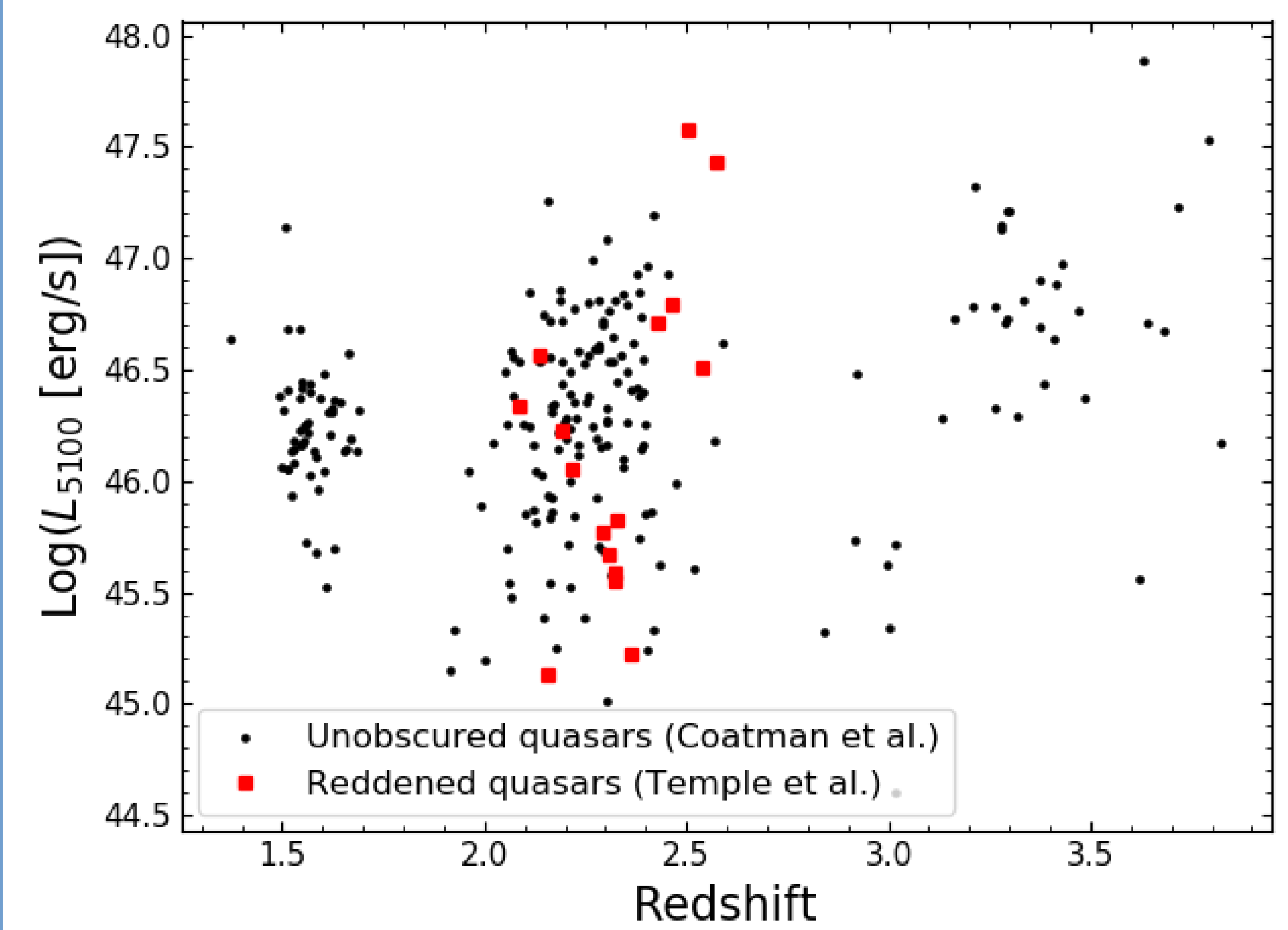


Outflow Kinematics and Dust in Reddened Type 1 Quasars at $z \sim 2$

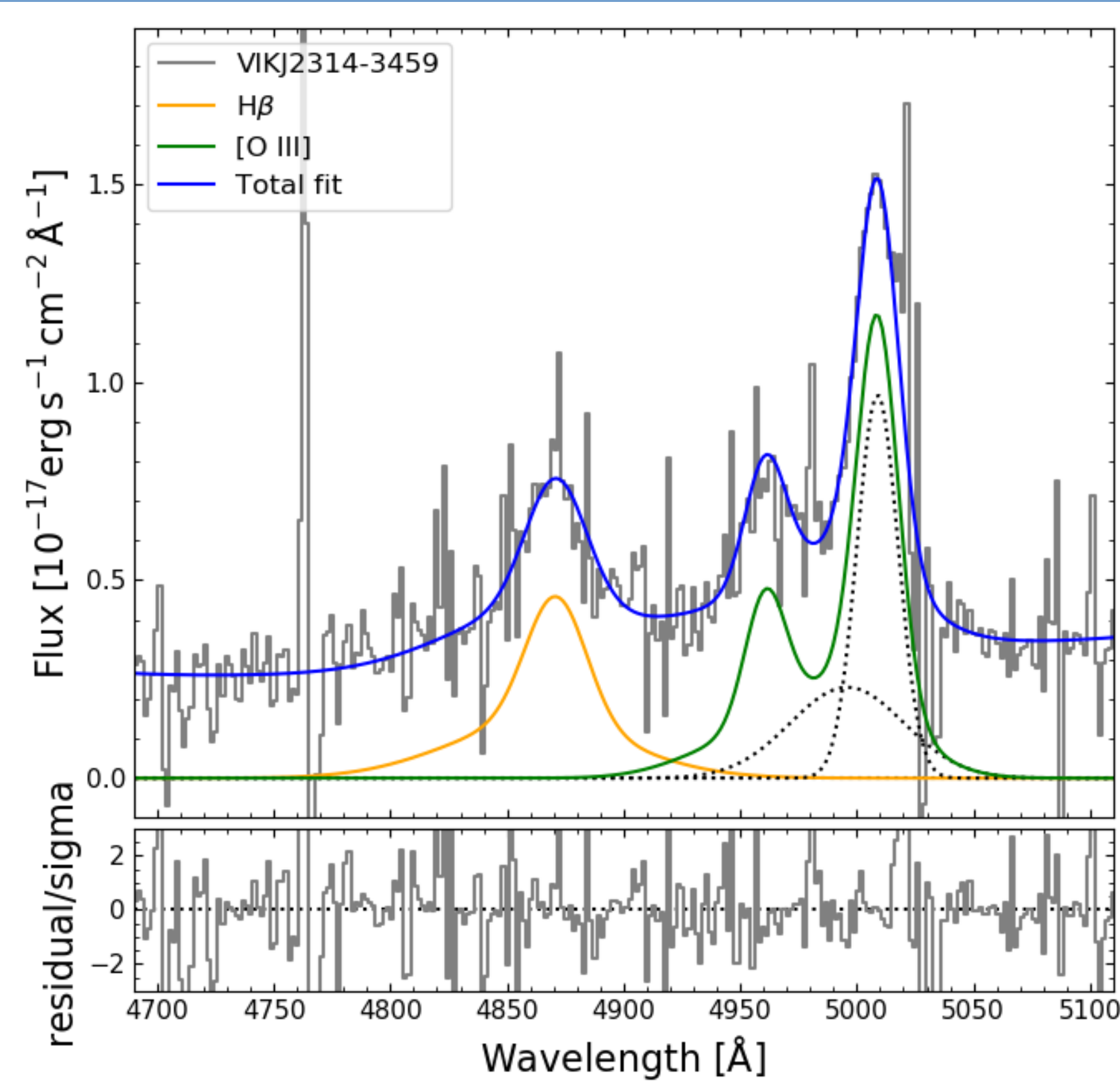
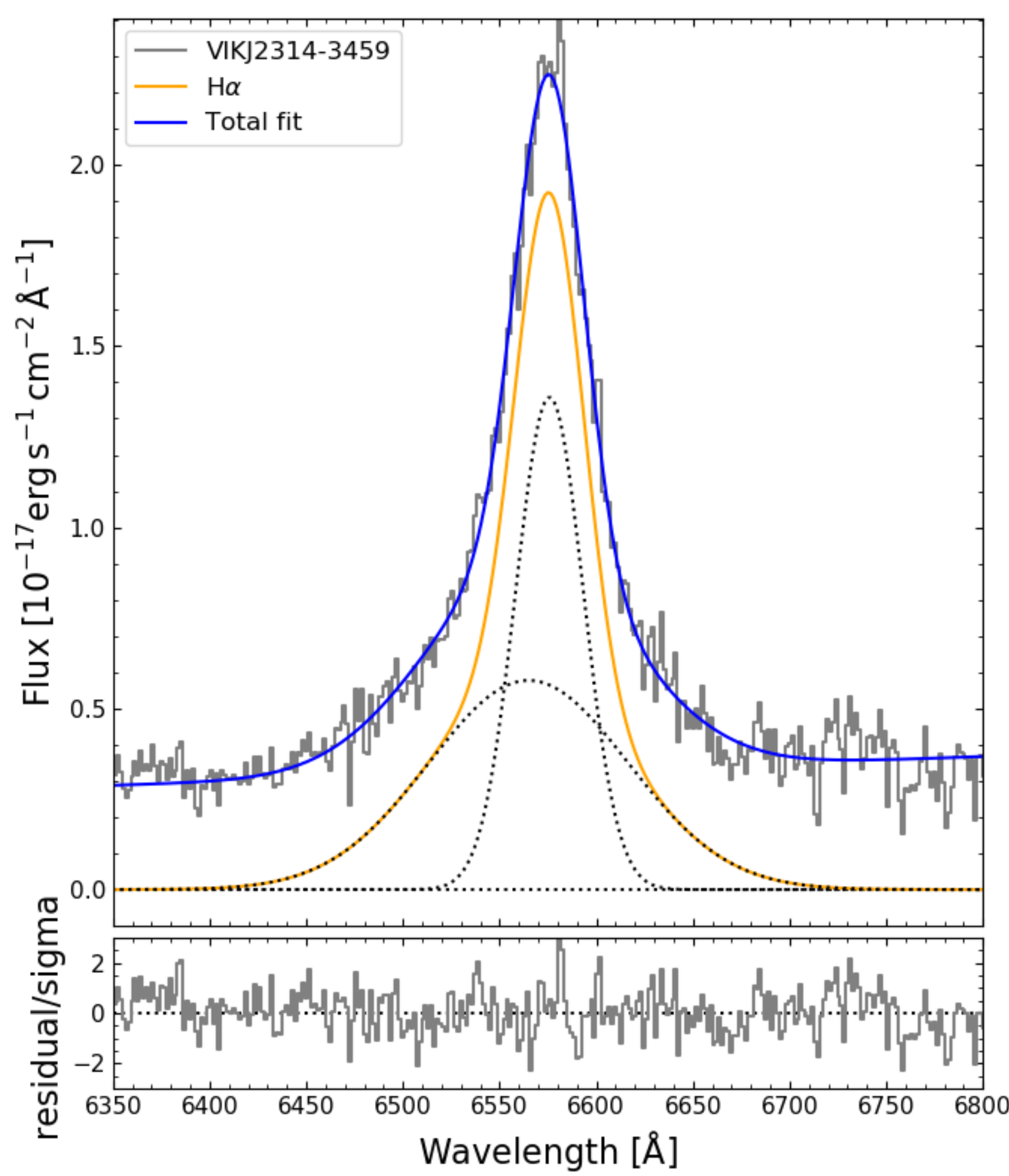
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SUMMARY

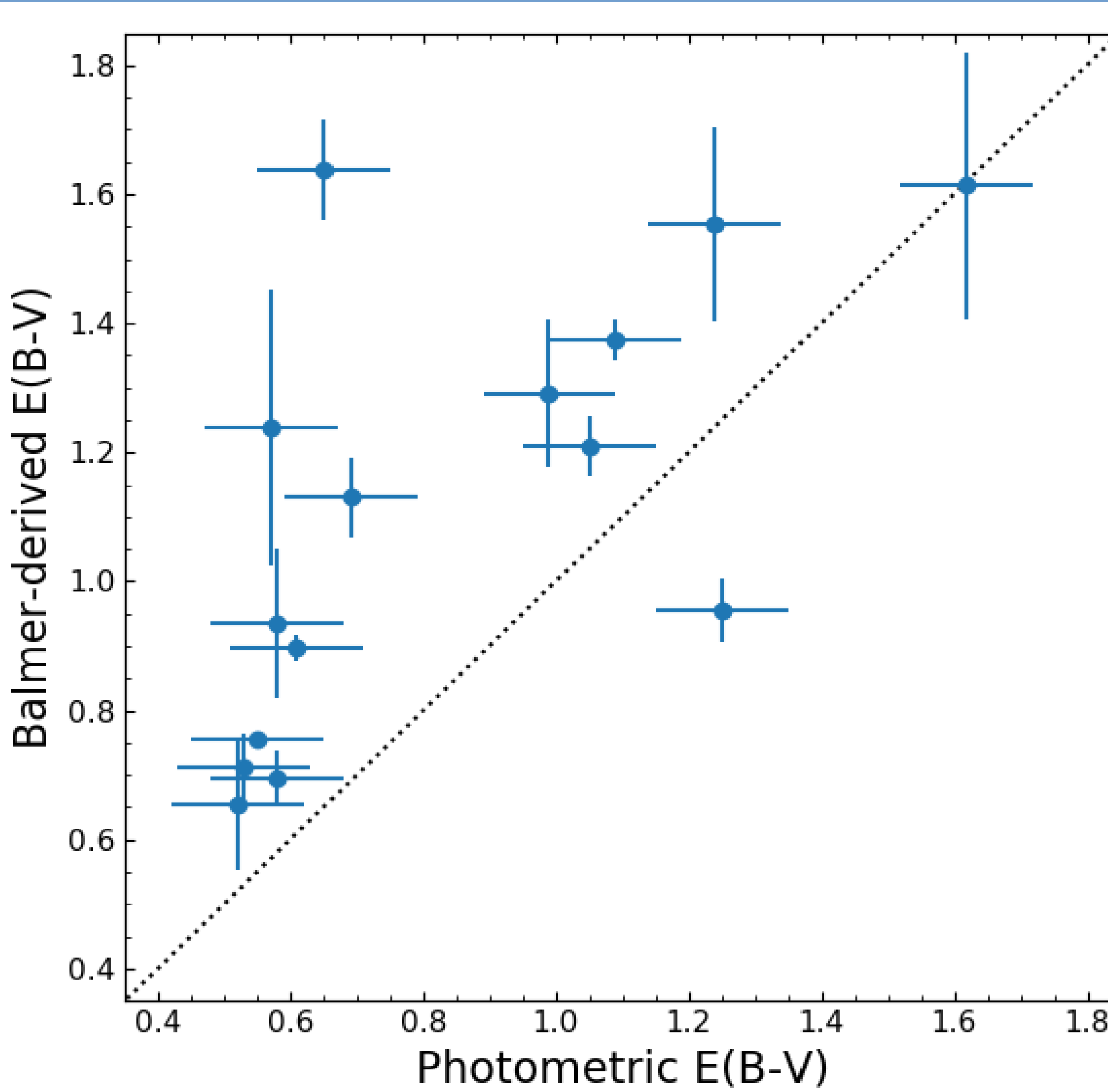
- [OIII] emission allows us to compare the kinematics of outflowing gas in high-luminosity reddened and unobscured quasars at redshift $z \sim 2$
- Balmer lines allow us to compare the extinction of the continuum and the Broad Line Region in reddened quasars
- We find no evidence for a strong difference in the outflow properties of the reddened and unobscured samples
- In reddened quasars we find, on average, the Narrow Line Region is only partially obscured compared to the continuum extinction



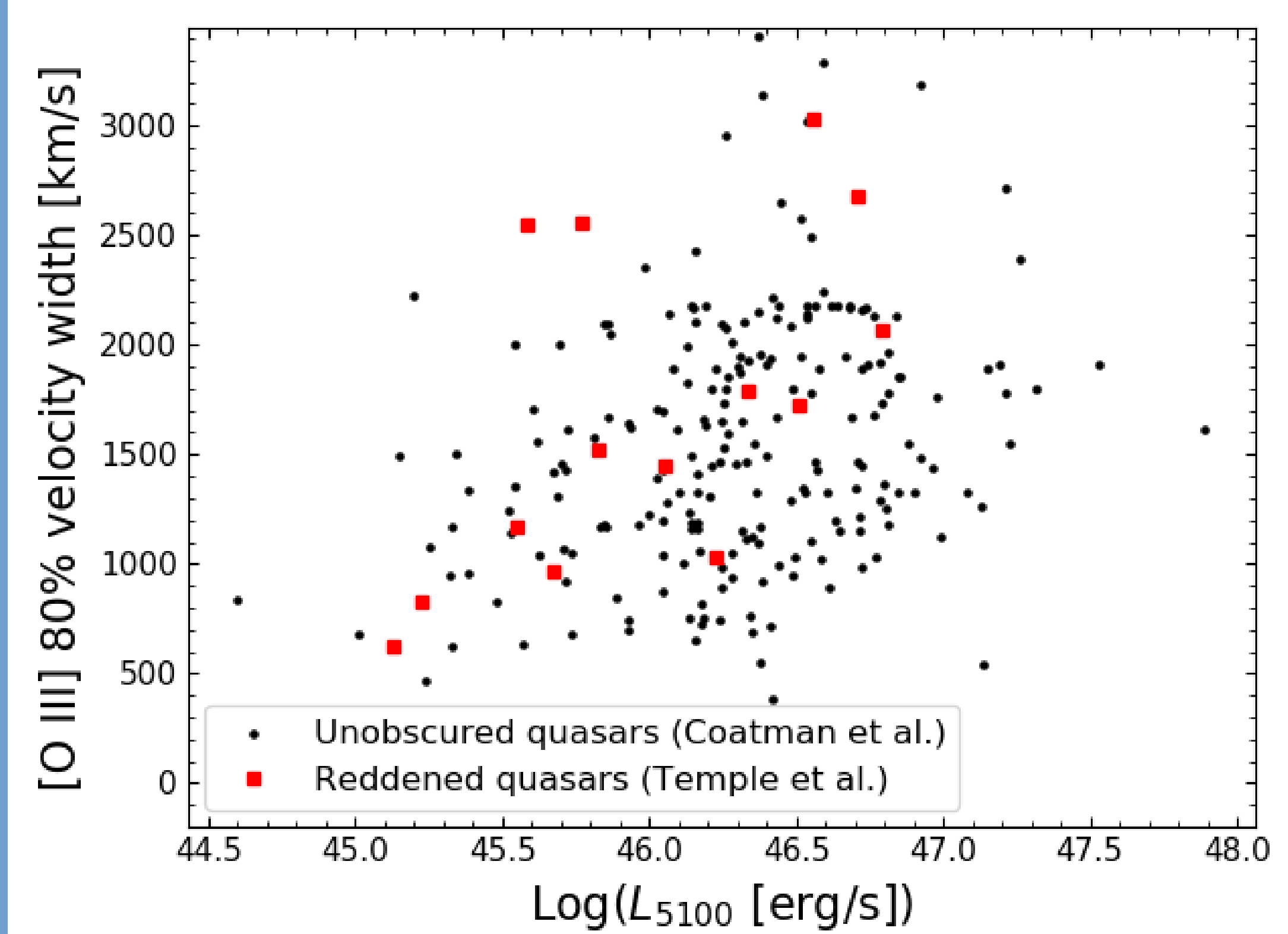
DATA



- New observations with VLT-SINFONI H+K of 16 high-luminosity, heavily dust-obscured, spectroscopic type 1 quasars at $2.0 < z < 2.6$, with spectral coverage of H α , H β and [OIII]
- We fit the emission lines to derive robust measures of the velocity width and equivalent width (strength) of each line in each object
- Compare to a large sample of 219 unobscured quasars in the same dust-corrected bolometric luminosity range, with measured [OIII] line properties from Coatman et al.

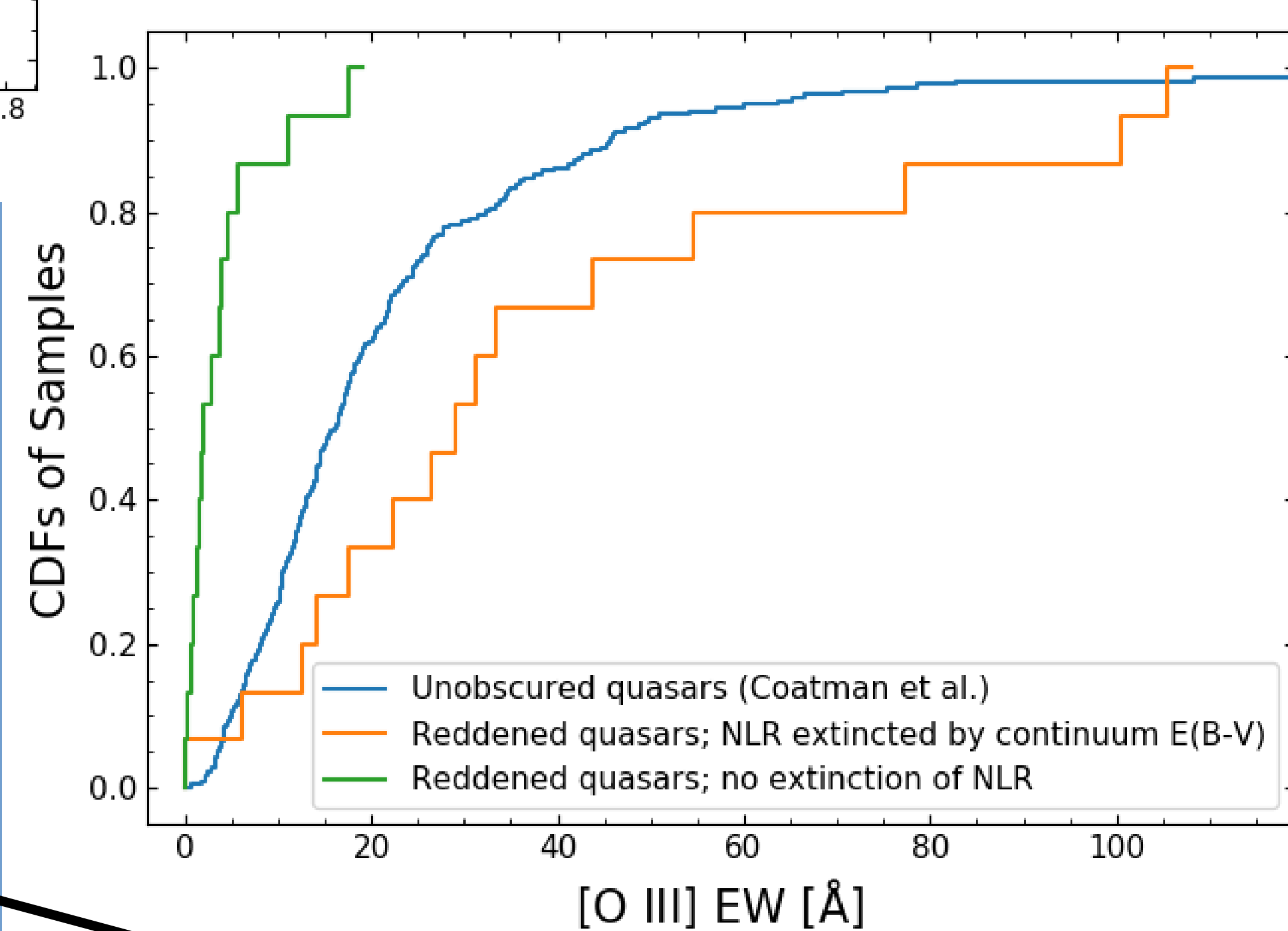


Using a KS test, we find no evidence for a difference in the distributions of the 50% and 80% velocity widths of the [OIII] emission line - suggesting there is **no strong difference in the kinematics of ionised gas outflows** when comparing the unobscured and heavily dust-obscured type 1 populations at $z \sim 2$



RESULTS

Comparing the Balmer decrements with the extinction of the continuum, we find the majority of the dust is likely to be located outside the Broad Line Region



Comparing the distribution of [OIII] equivalent widths in our reddened quasars with the unobscured sample, we find the Narrow Line Region is only partially obscured on average, with the NLR having $\sim 75\%$ of the continuum extinction

$\sim 40\%$ of the [OIII] emission lines in our reddened sample have broad blue wings, showing evidence for ionised gas outflows

Cartoon of reddened quasar (not to scale)

