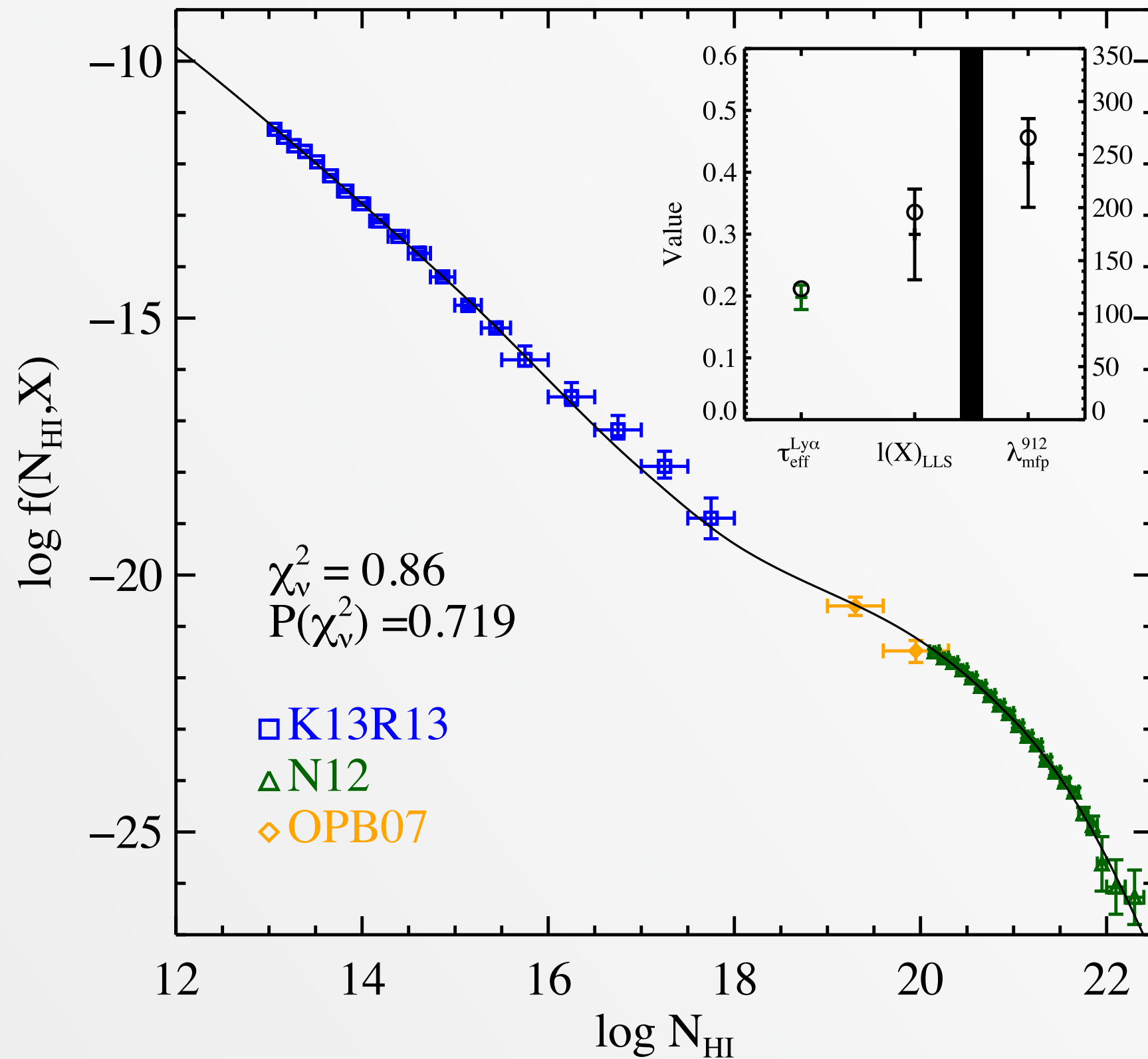
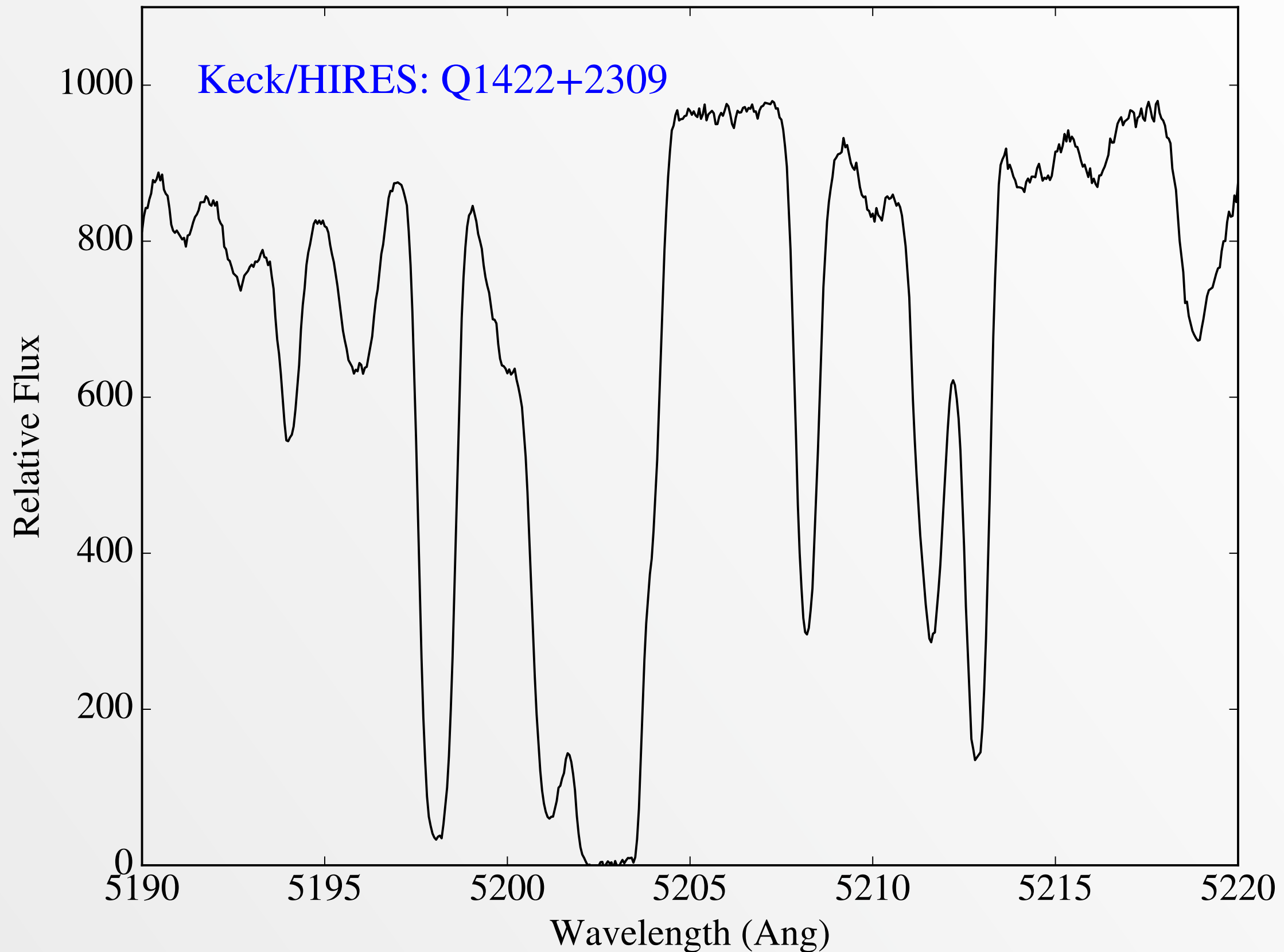


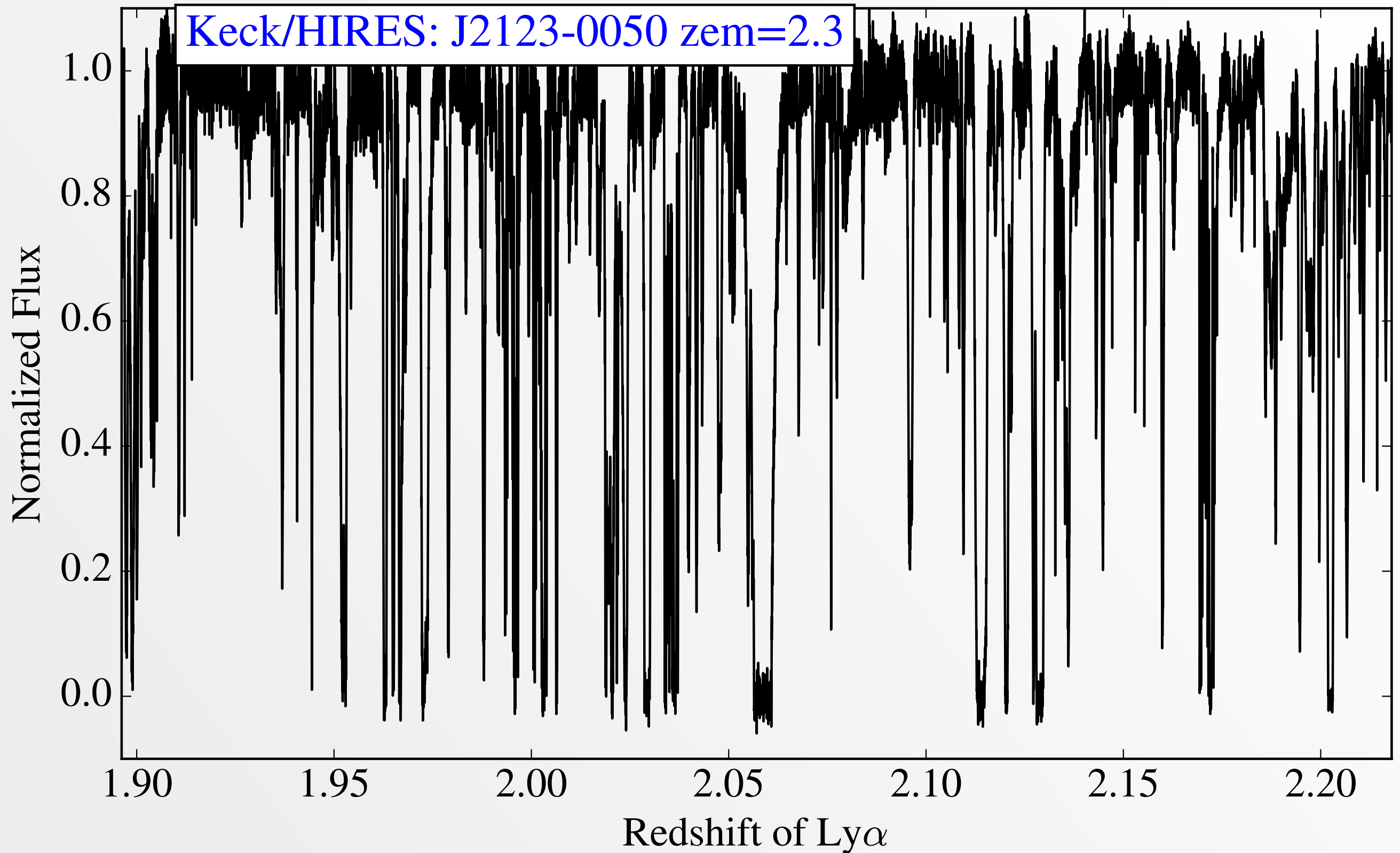
Characterizing the Ly α Forest



Absorption Lines



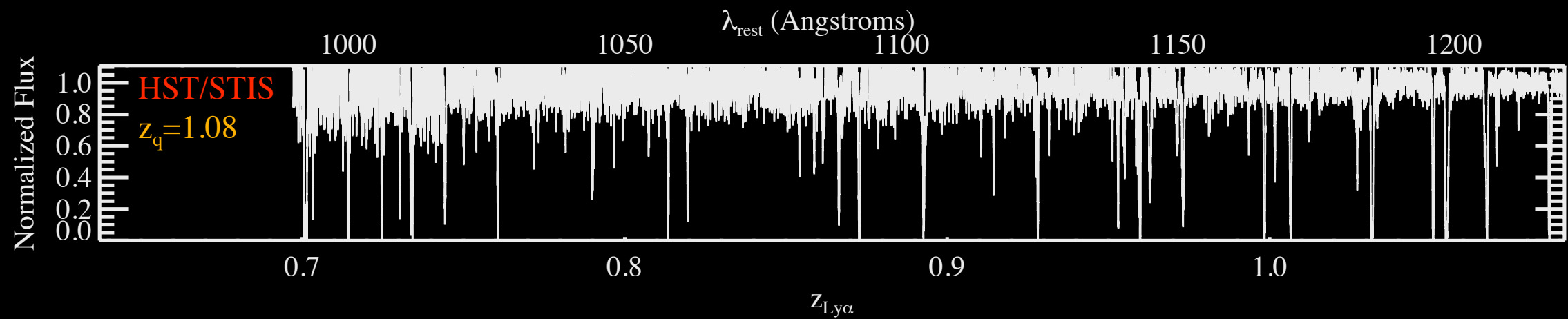
Evolving Ly α Forest (see PDF in Figures/)



Evolving Ly α Forest Absorption

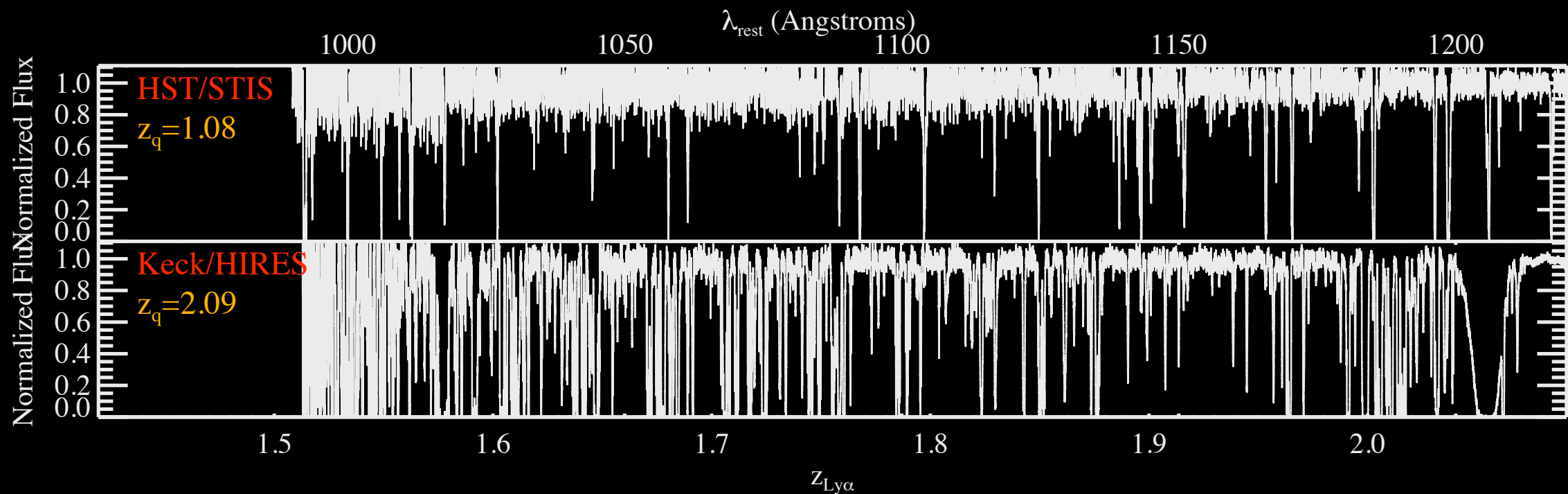
The expanding (contracting) universe
implies higher Ly α absorption at higher z .

Evolving Ly α Forest Absorption



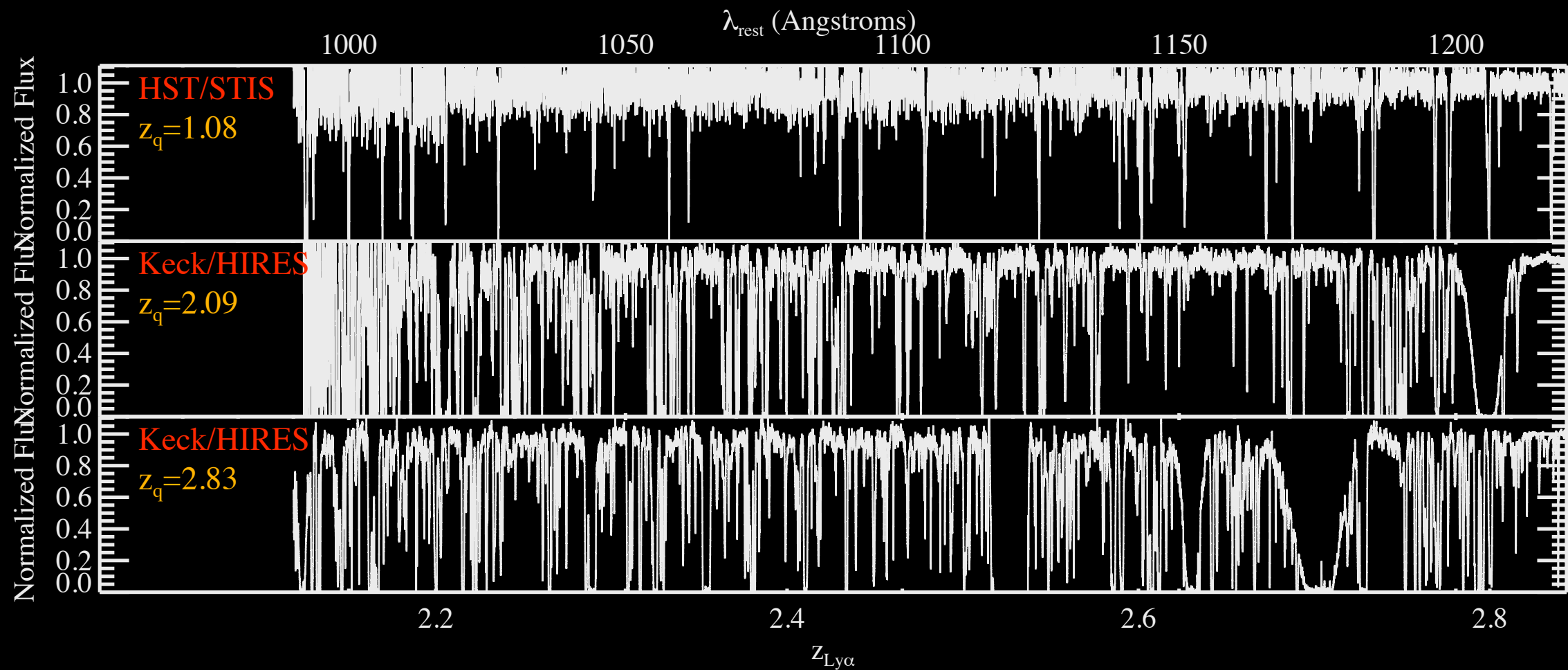
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Evolving Ly α Forest Absorption



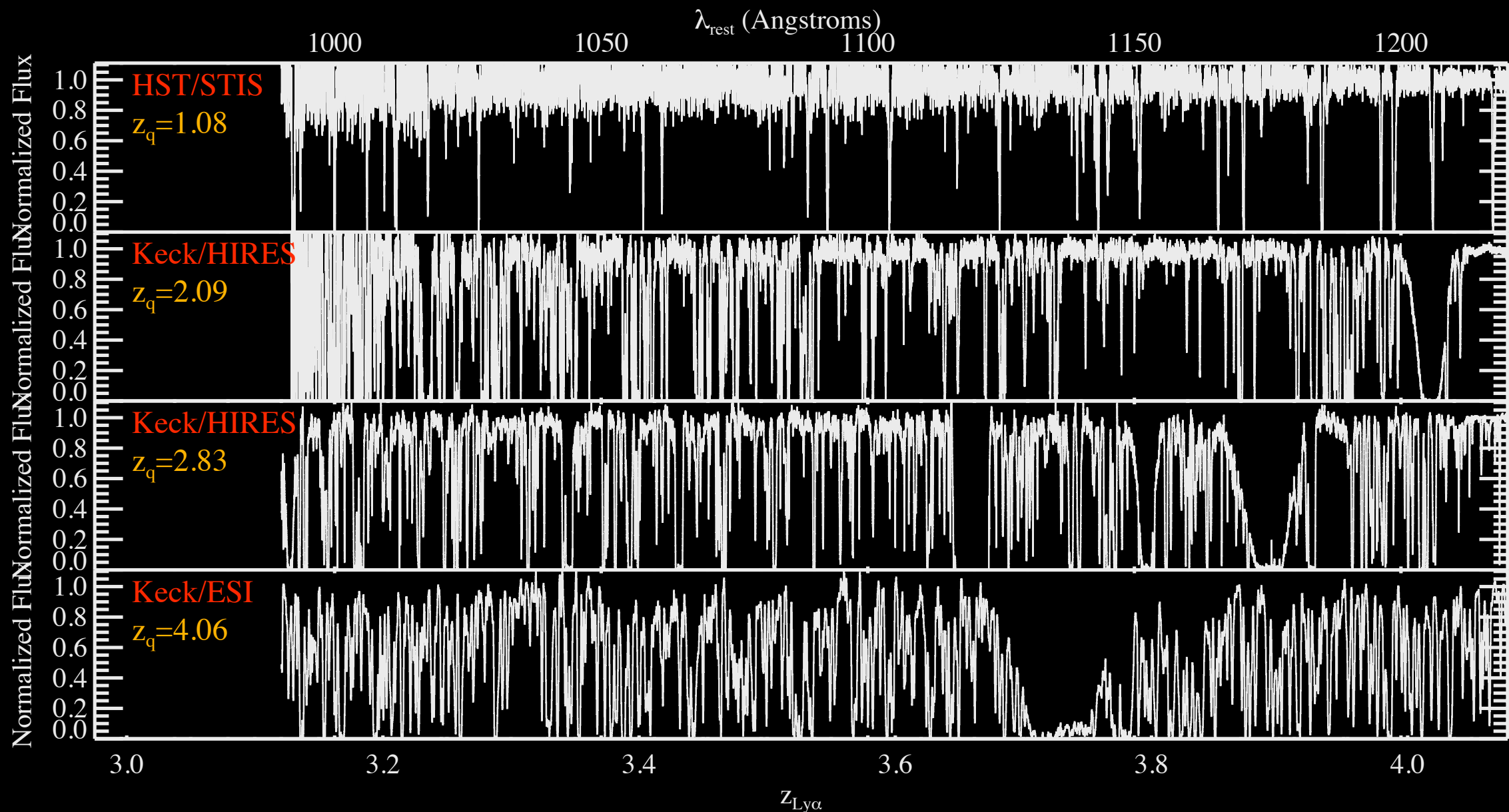
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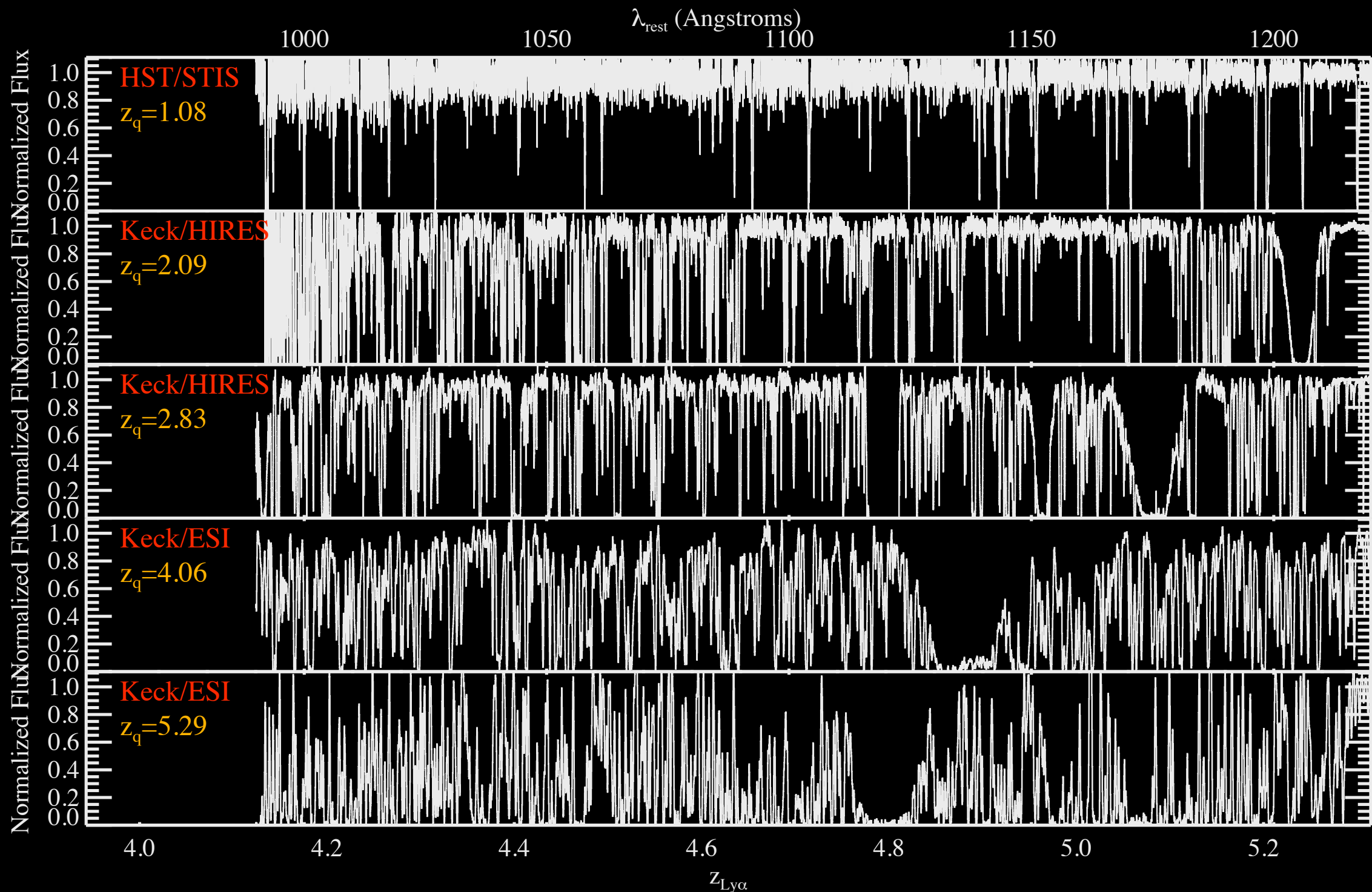
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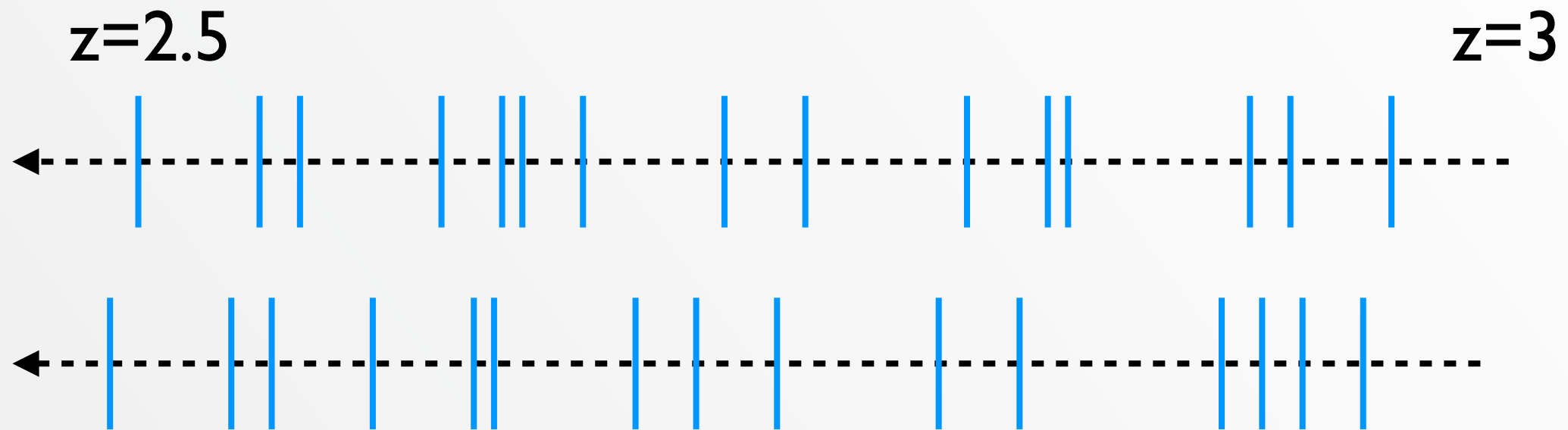
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Survey Path



Each quasar contributes $dz=0.15$ of survey path for a total of $Dz = 0.6$. $f(N_{\text{HI}})$ is derived from the set of lines

Survey Path



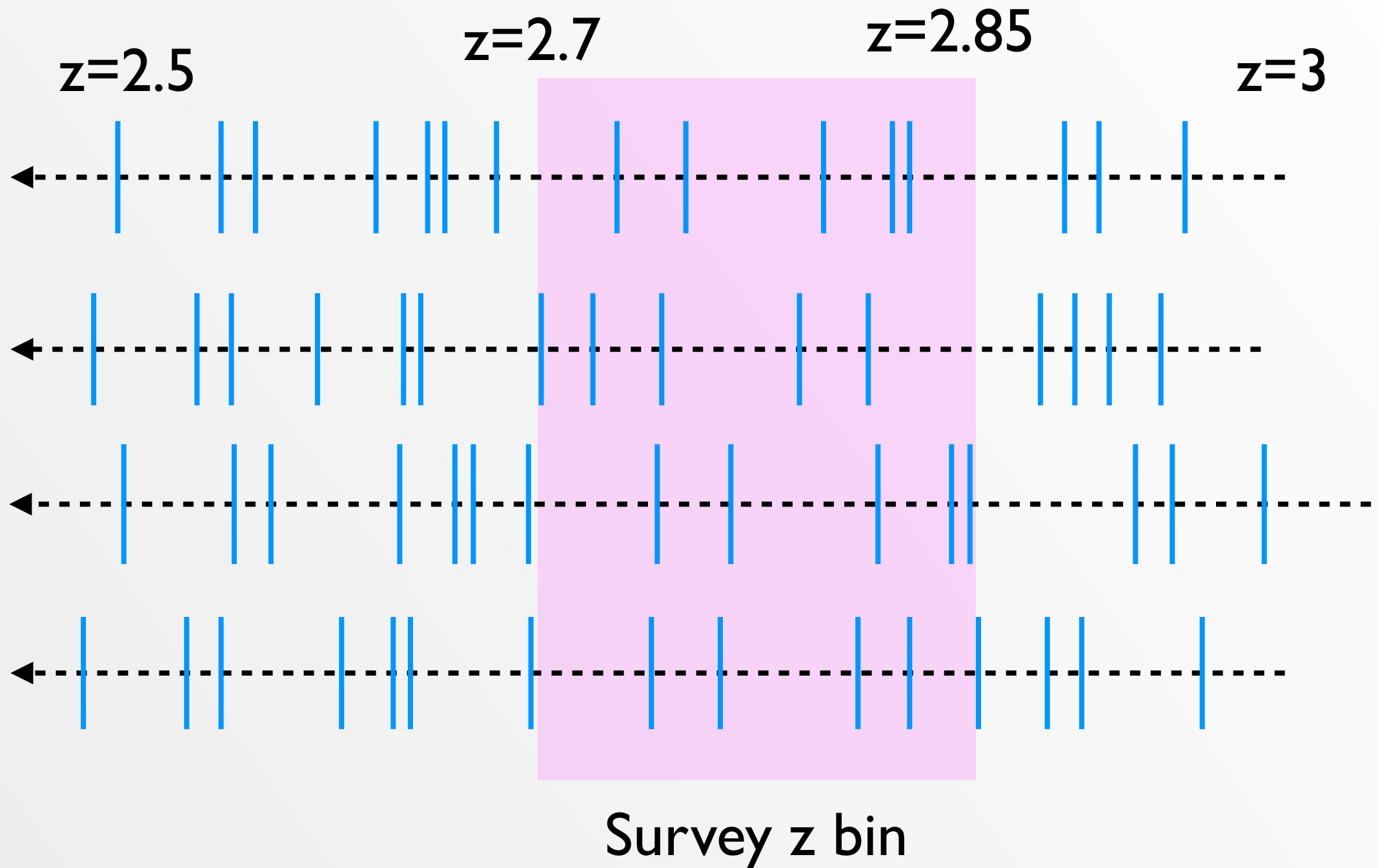
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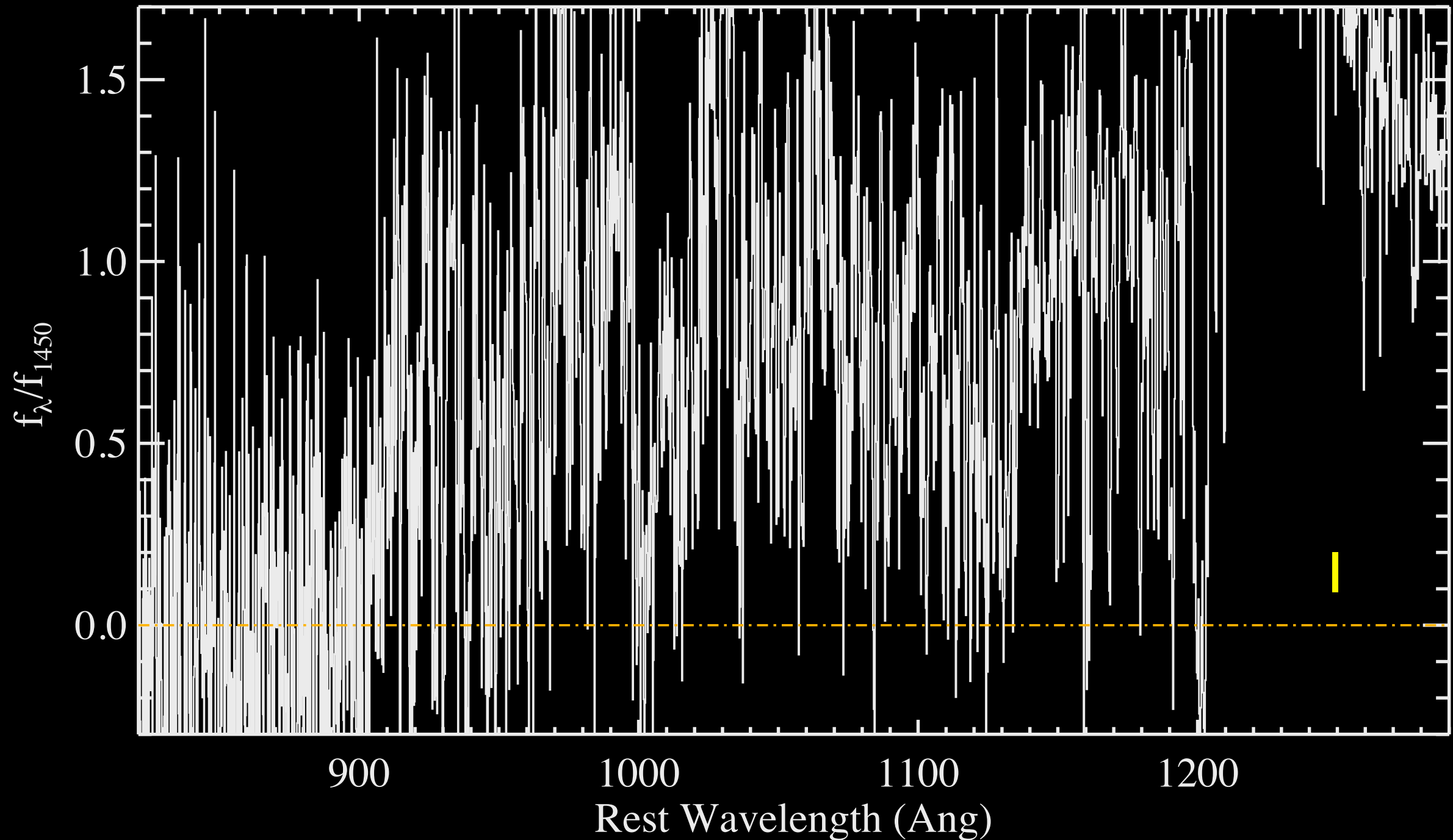
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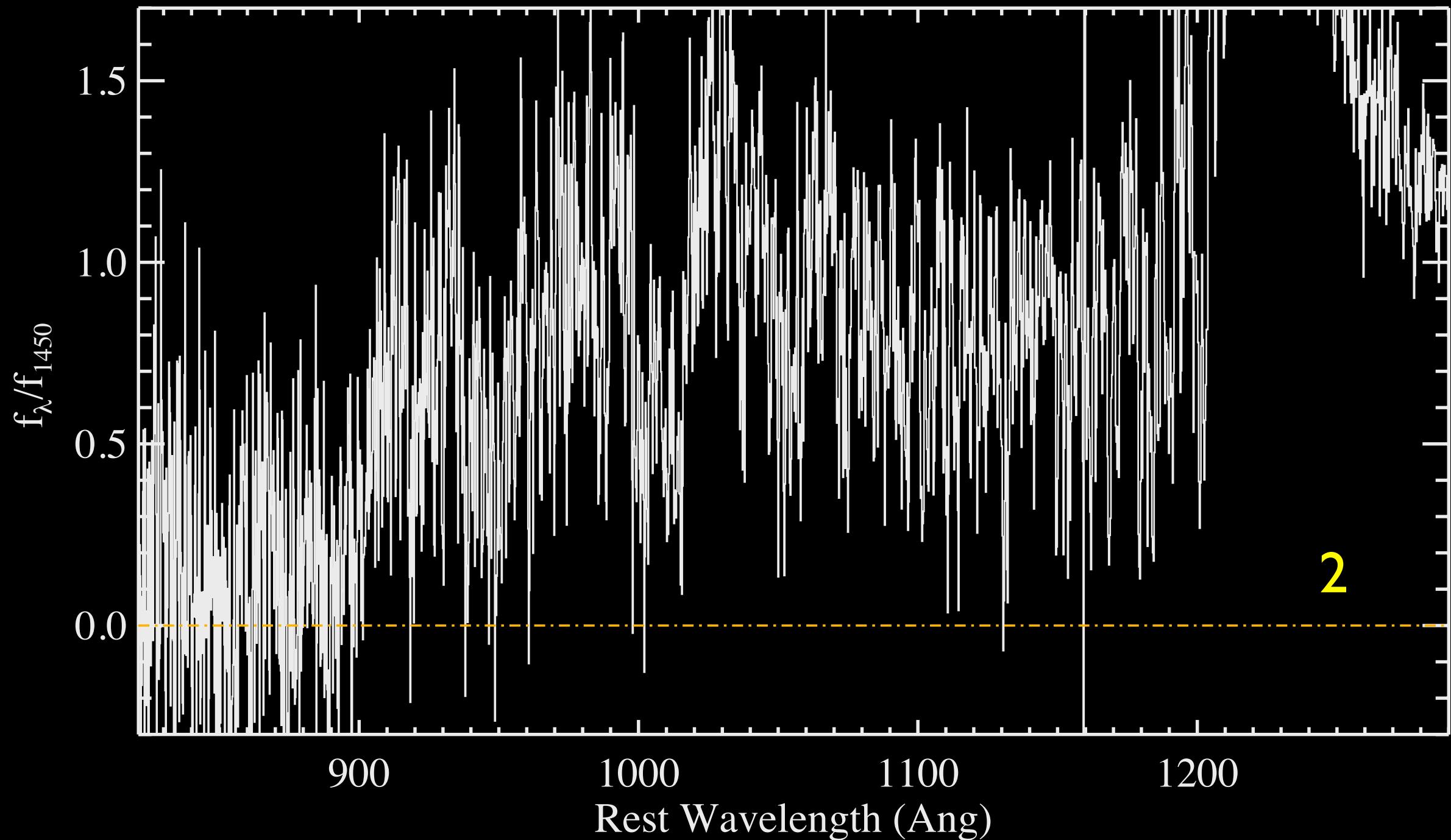
Stacking Quasar Spectra

- Narrow range of z
- Straight average (no weighting)
- Normalized at



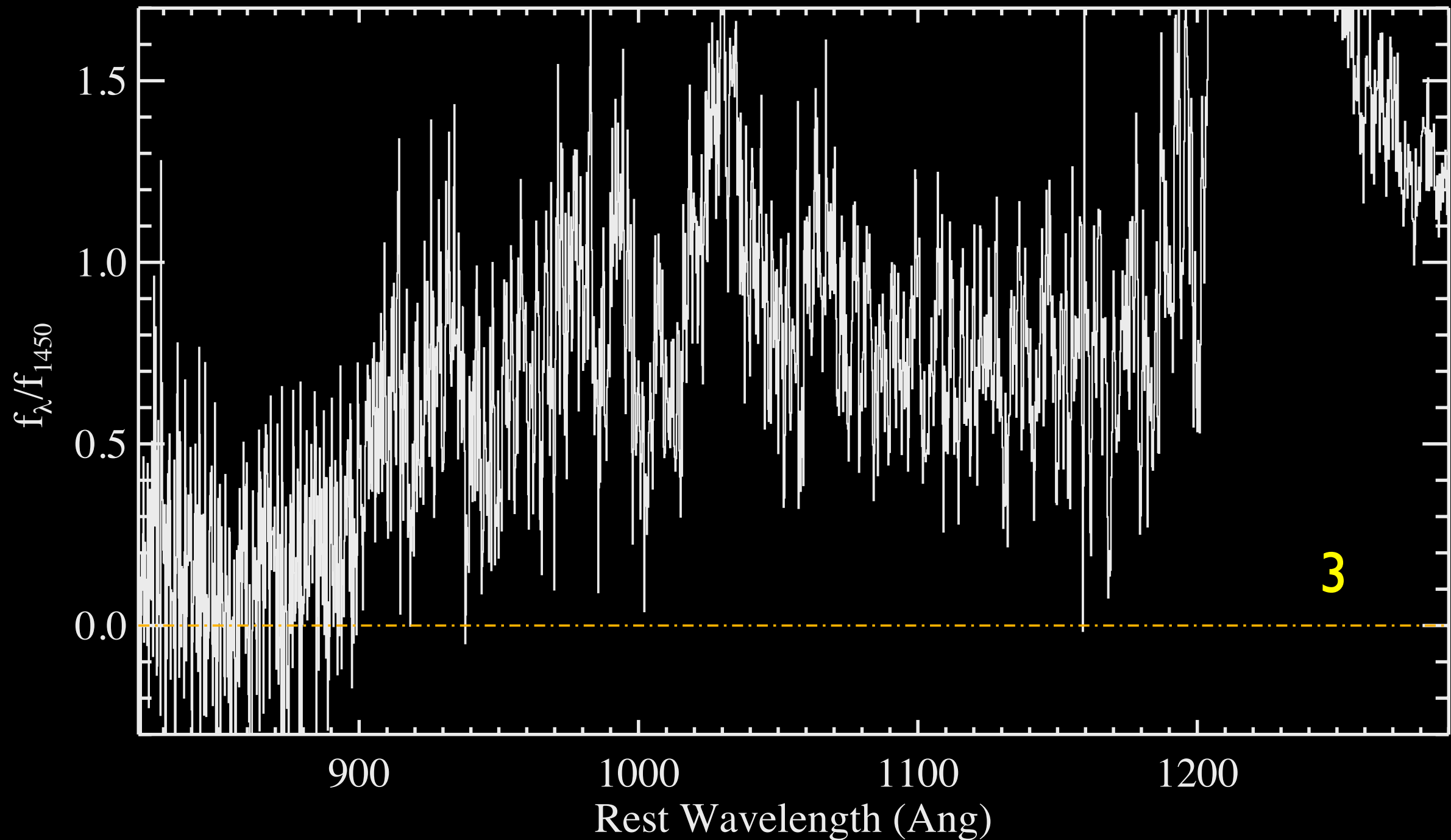
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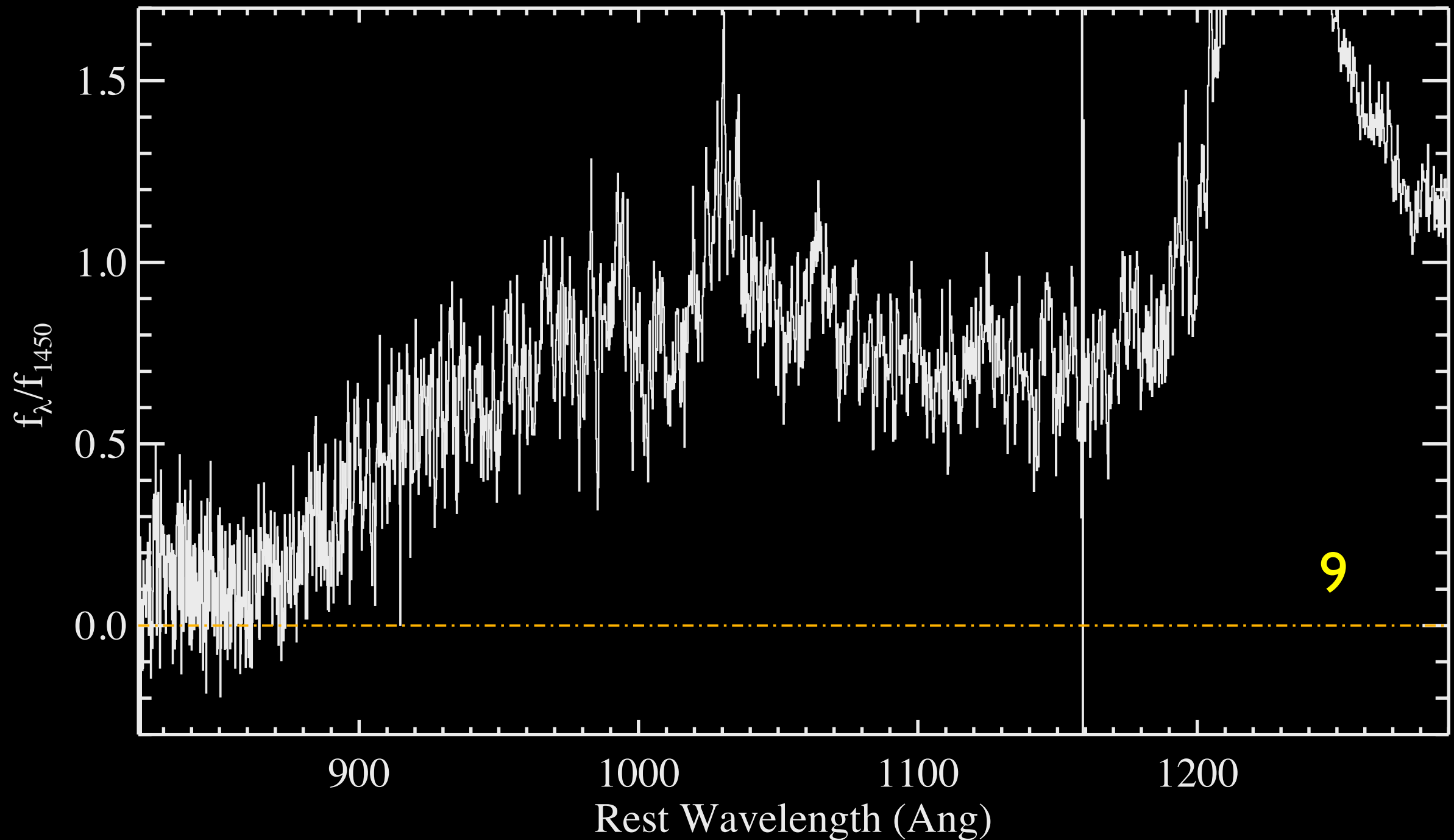
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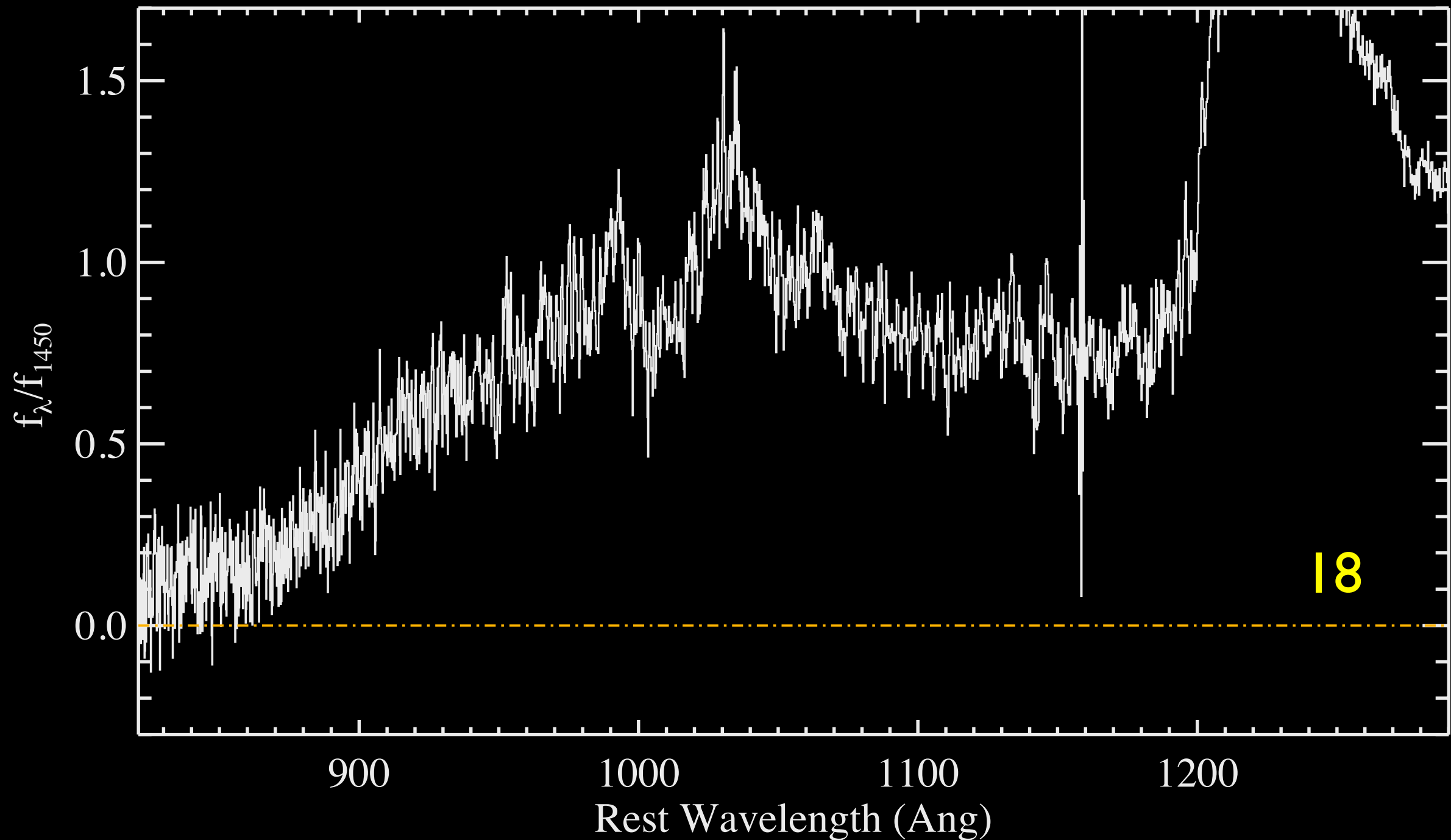
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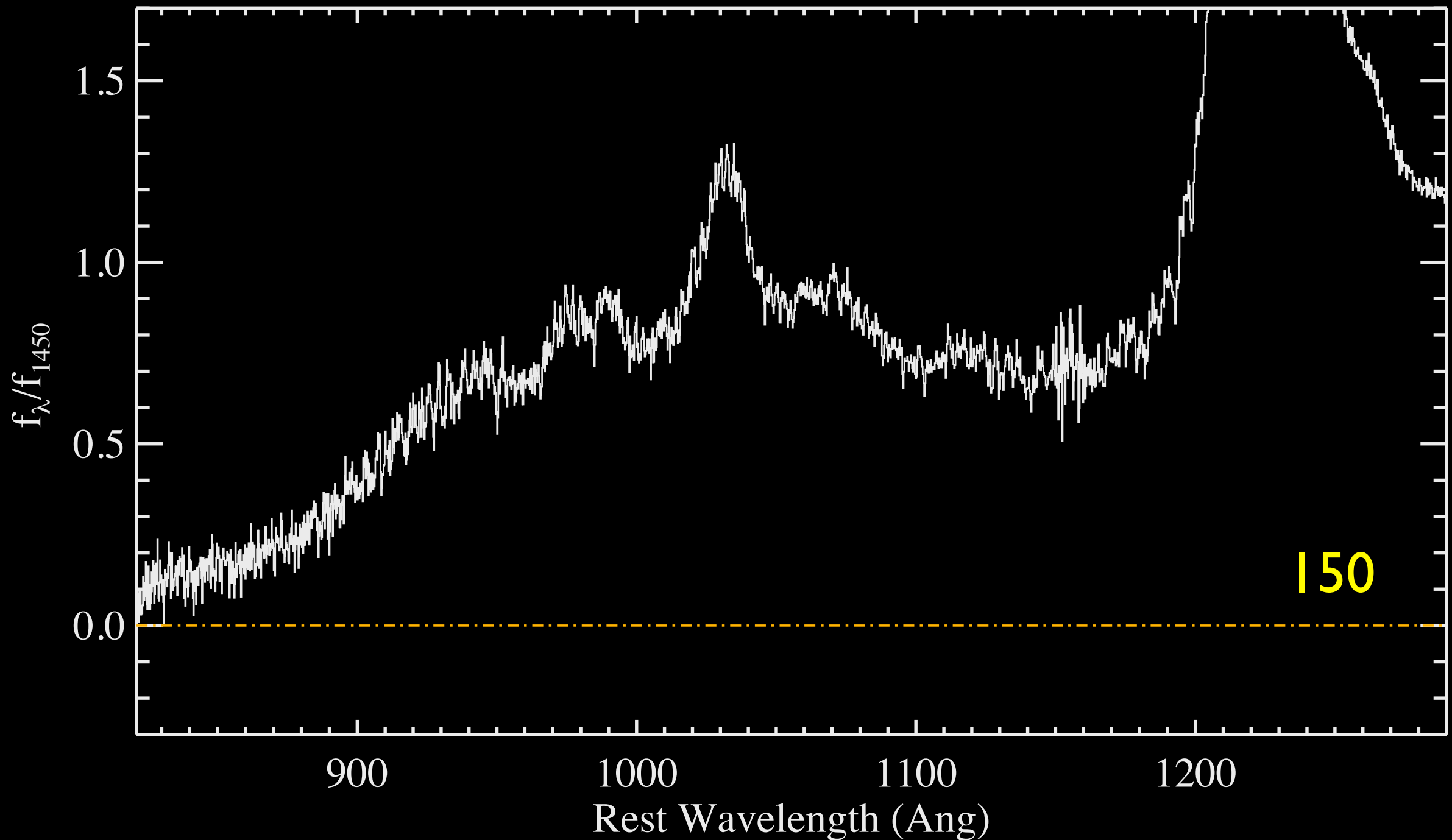
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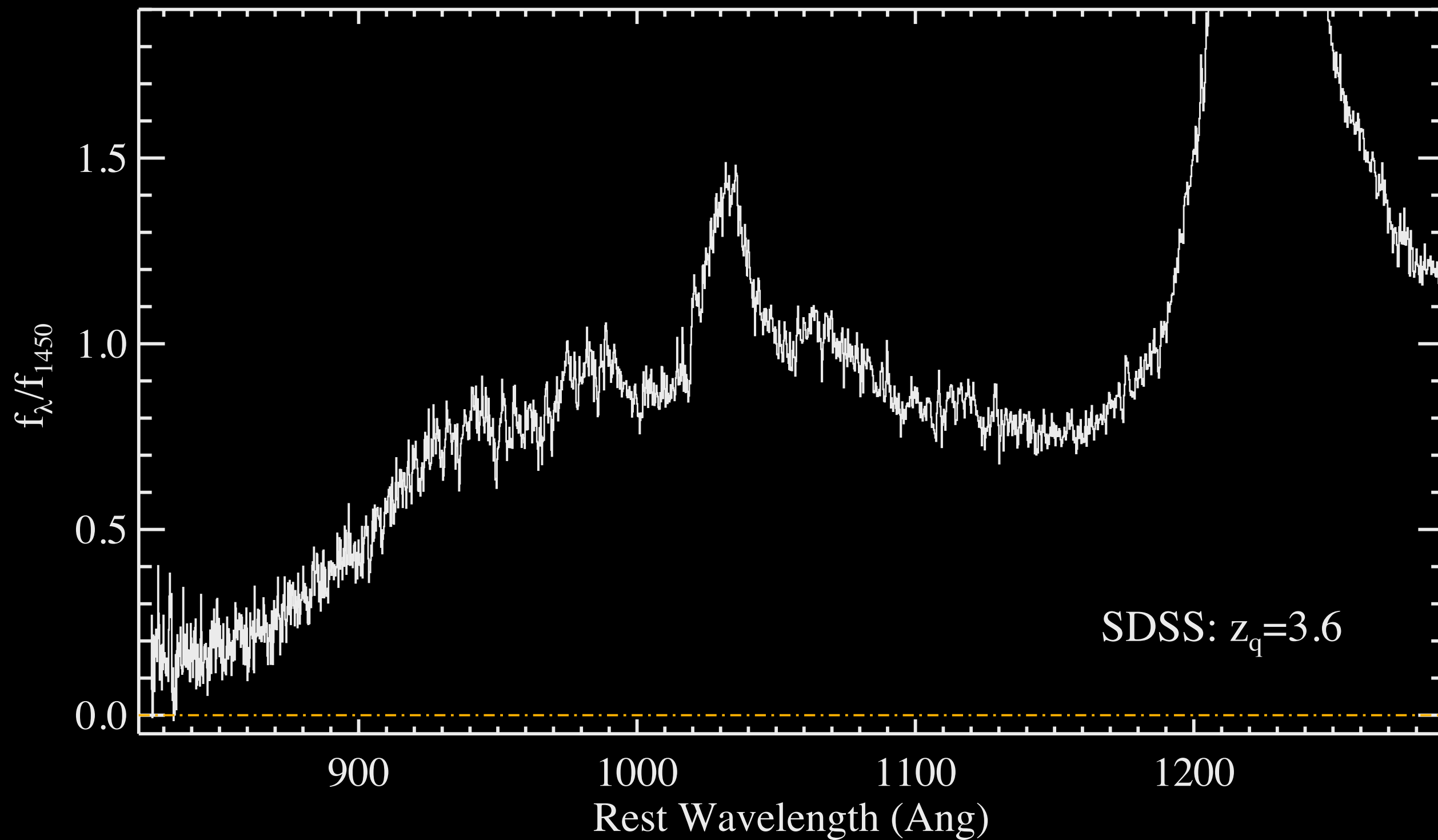
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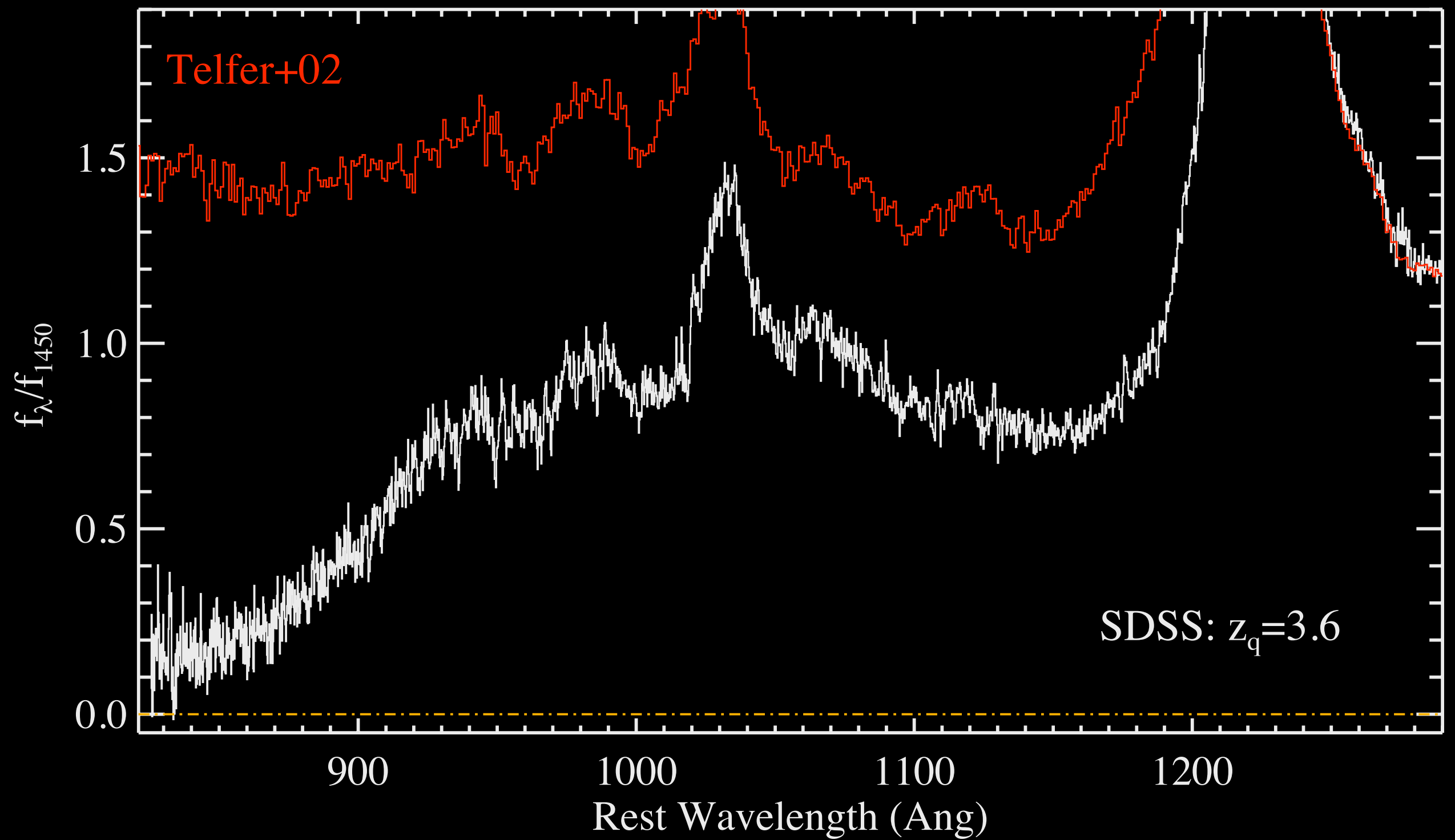


Effective Ly α Opacity

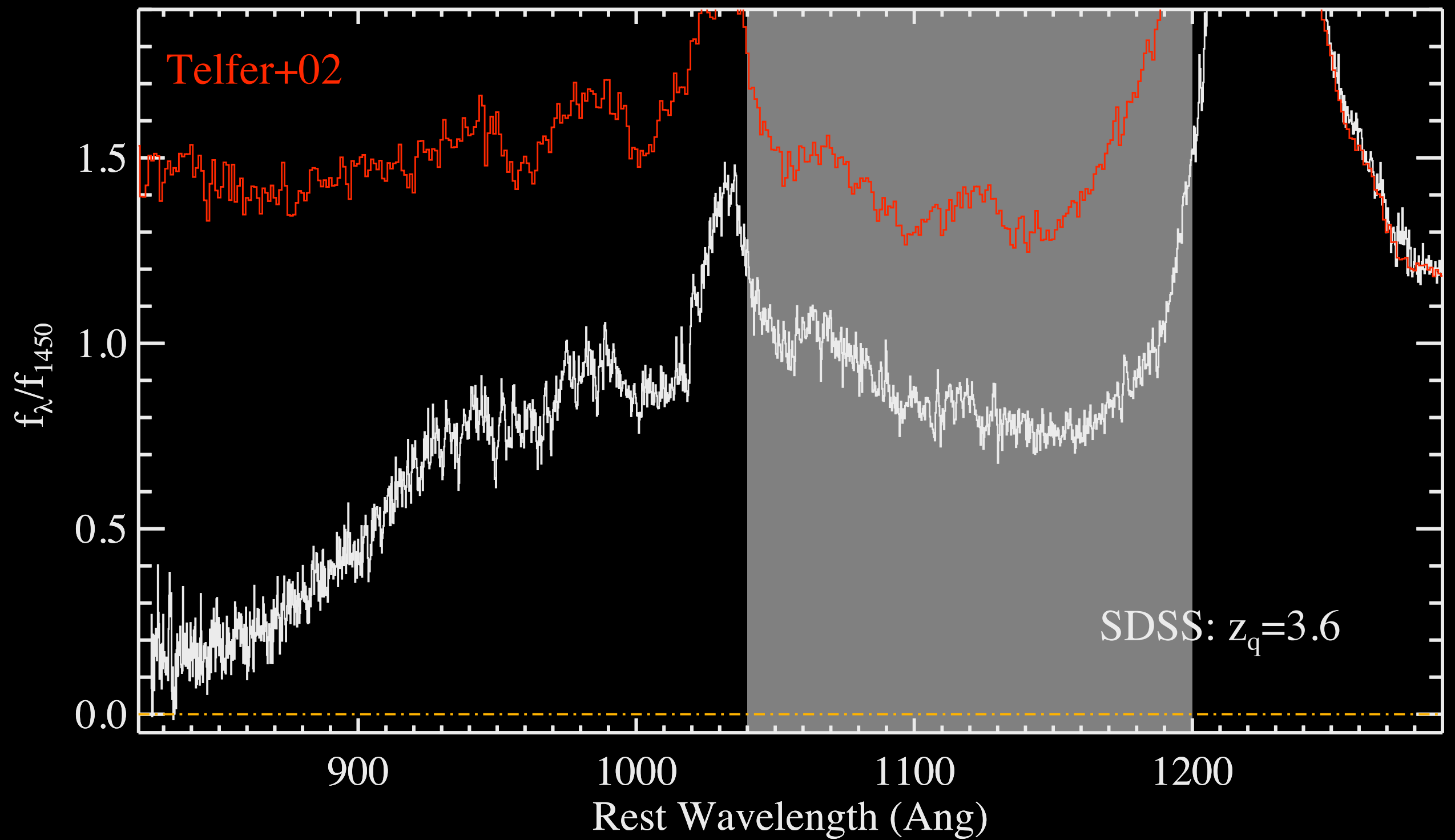
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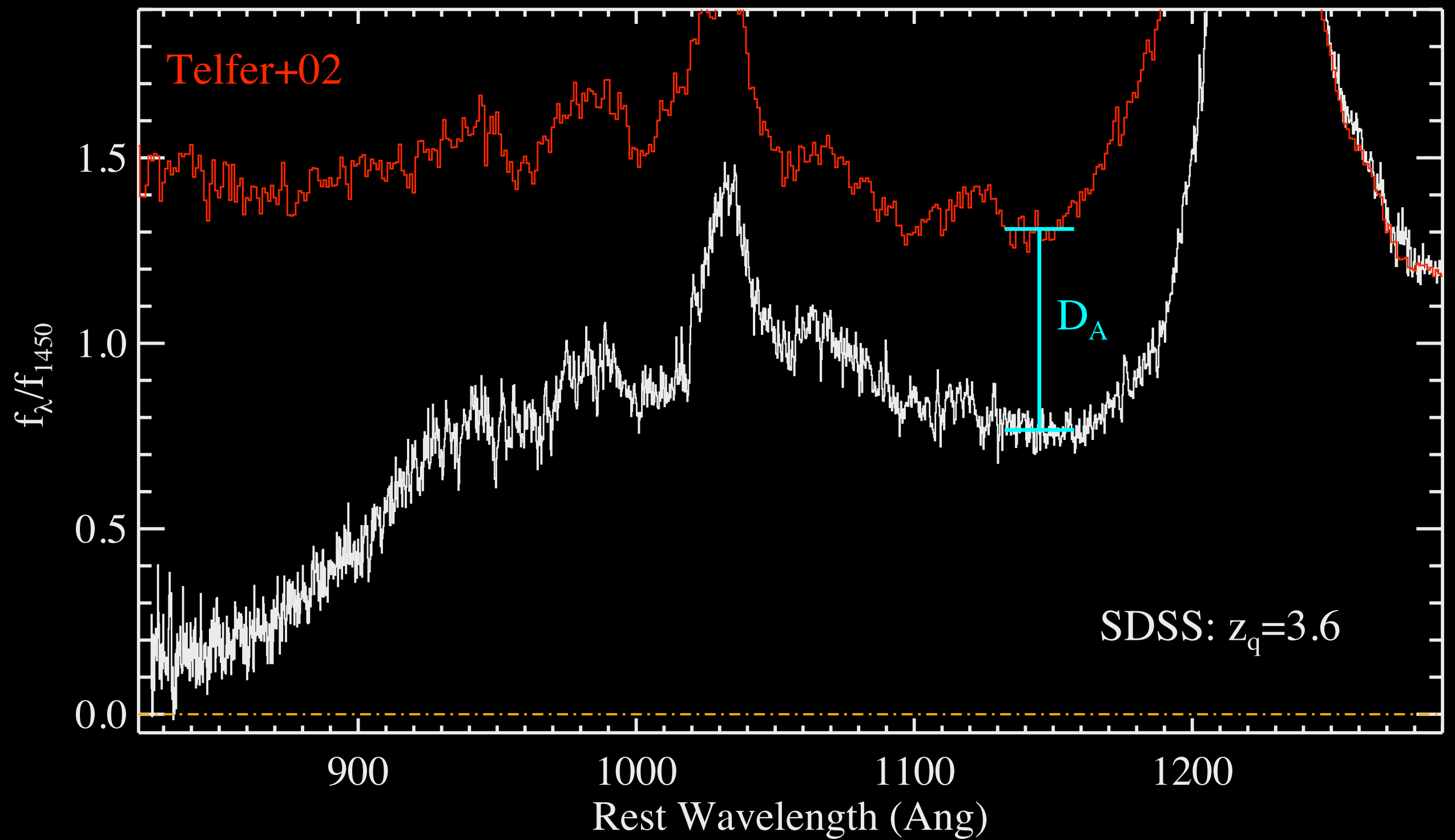
Effective Ly α Opacity



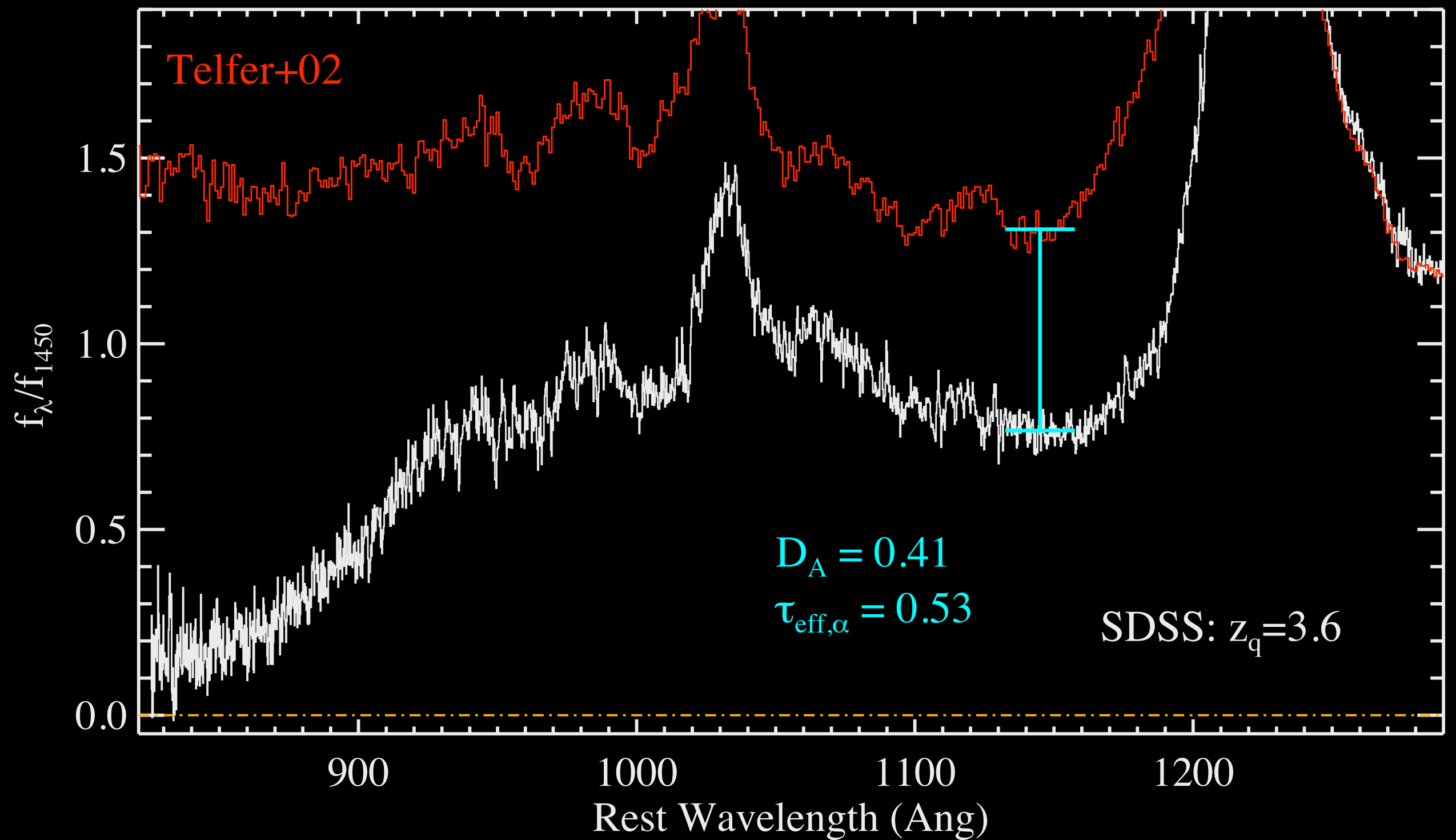
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