Lyman-α WG

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DESI Science Workshop, Argonne Nov 2015

Themes

- What can we learn from the first observation of a g=23 QSO target? Is it a quasar? Is it a Lyman-alpha quasar? What can we say about its redshift?
  - Extend QSO templates to g > 22 and z < 2.1
  - Characterize alternate hypotheses: what stars & galaxies are most likely to fake a QSO?
  - Implement simple redshift chi-sq. scan.
  - Investigate redmonster

- A key targeting assumption is that only true quasars will be re-observed after the first pass (from TDR p.65):

From the first pass of targeting over the sky, we expect to identify 170 QSOs per deg2 from a sample of about 260 targets per deg2, for a target selection efficiency (including redshift failures) of 67%. For the subsequent passes, the target selection efficiency will be 100%, as only objects identified as z > 2.1 QSOs will be re-observed. After four passes, the average target selection efficiency is therefore of 88%.

LSS sample

Lyman-α sample

eBOSS, SEQUELS

BOSS

g-band magnitude (ext. corr.)

23.0
22.5
22.0
21.5
21.0
20.5
20.0
19.5
19.0

0
1
2
3
4
5
6

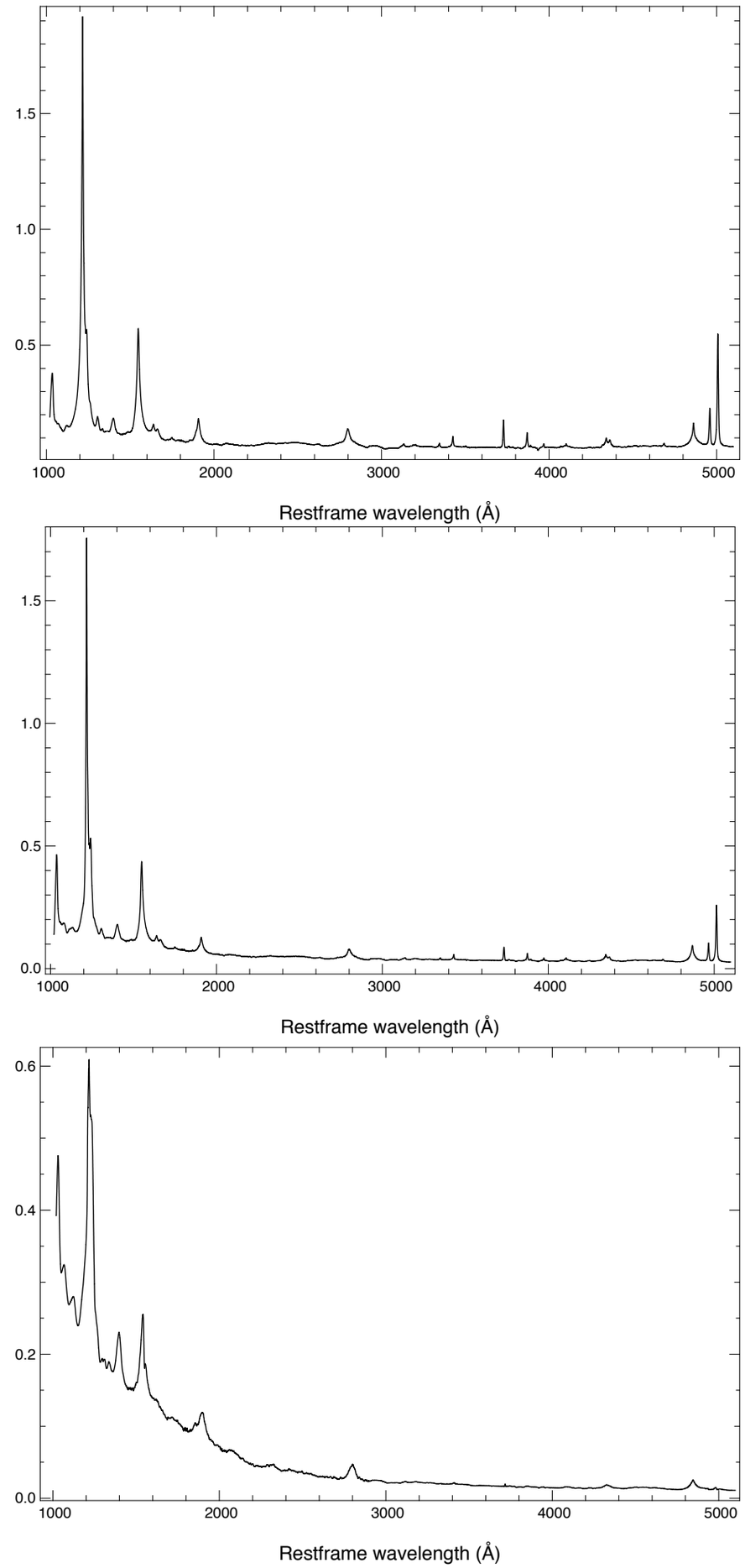
QSO redshift

N(z) / sq.deg. / Δz

5.4
4.8
4.2
3.6
3.0
2.4
1.8
1.2
0.6
0.0

Progress so far today (!)

Quantify expected QSO diversity using PCA analysis of DR12Q (Isabelle Paris)



Stretch Goals

- Implement extinction corrections.
- Study impact of QSO variability:
  - How to optimally combine exposures taken ~once per year for Lya analysis.
- Produce bricks with realistic distribution of QSOs for later study (and to test data model).

- Everyone is welcome: there is lots to do.
- Working at Argonne and Marseilles this week.
- Using github repo and issues to coordinate, share code, and document progress:
    - https://github.com/dkirkby/ArgonneLymanAlpha