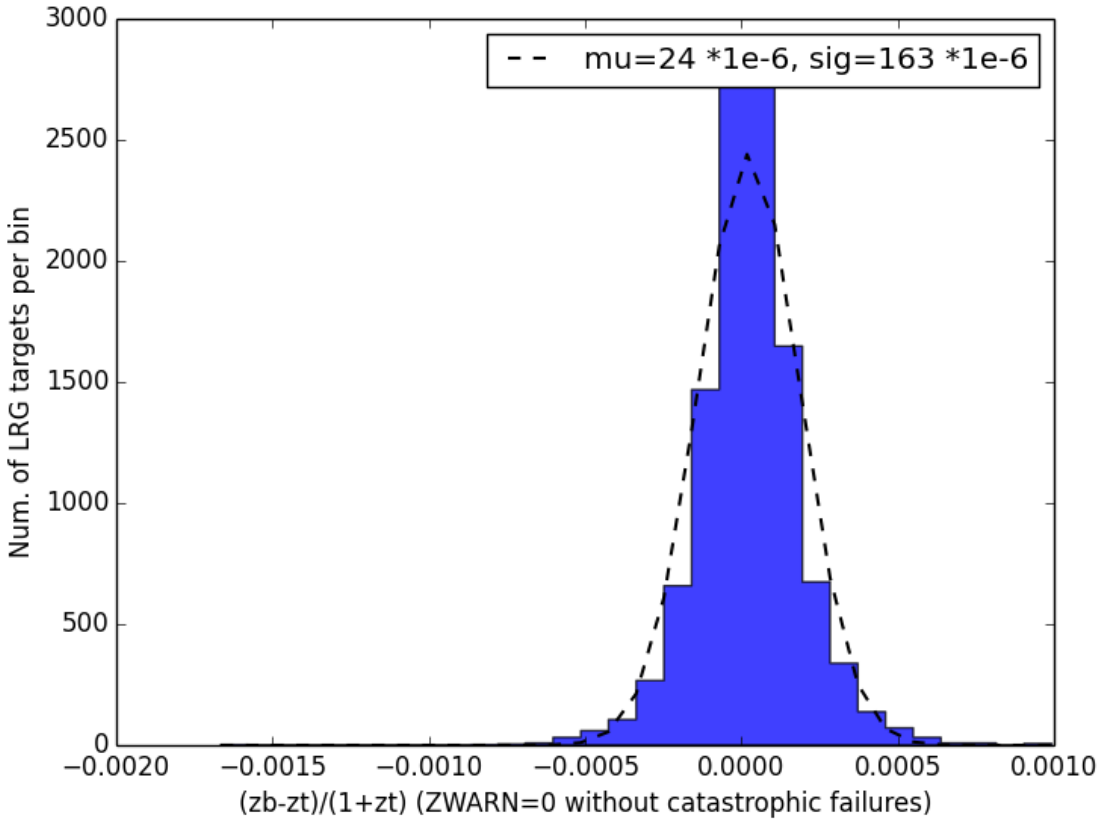
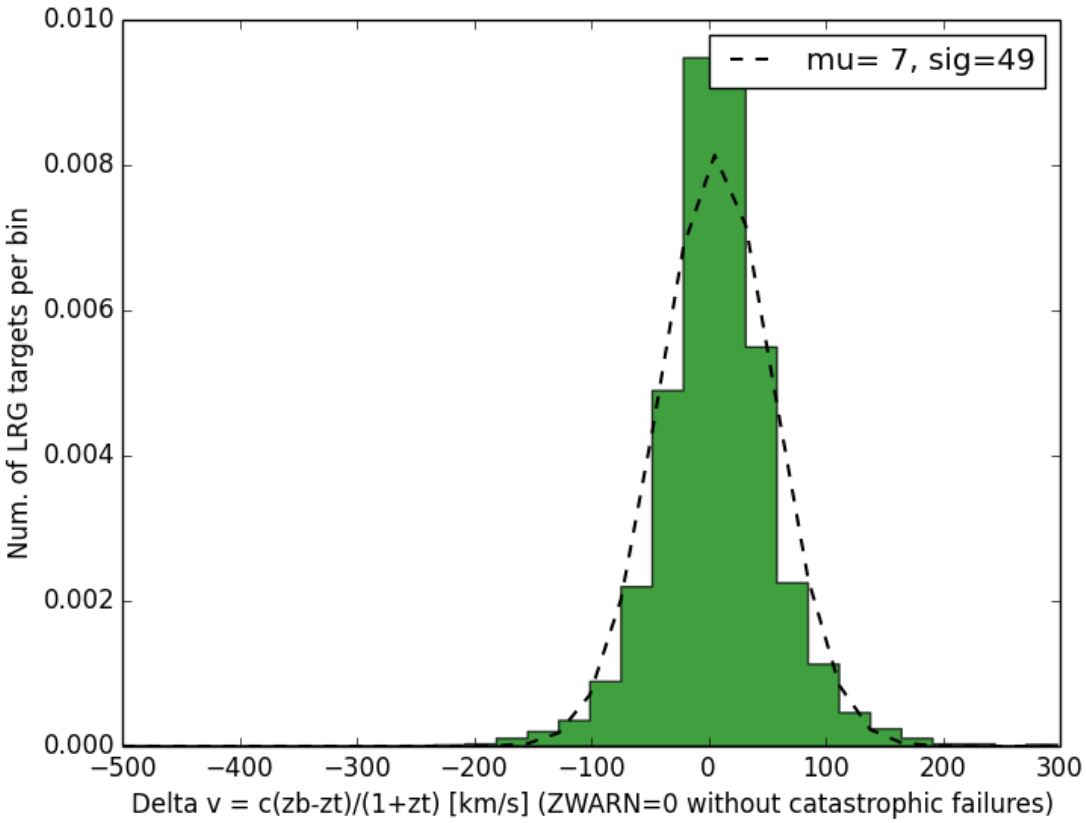
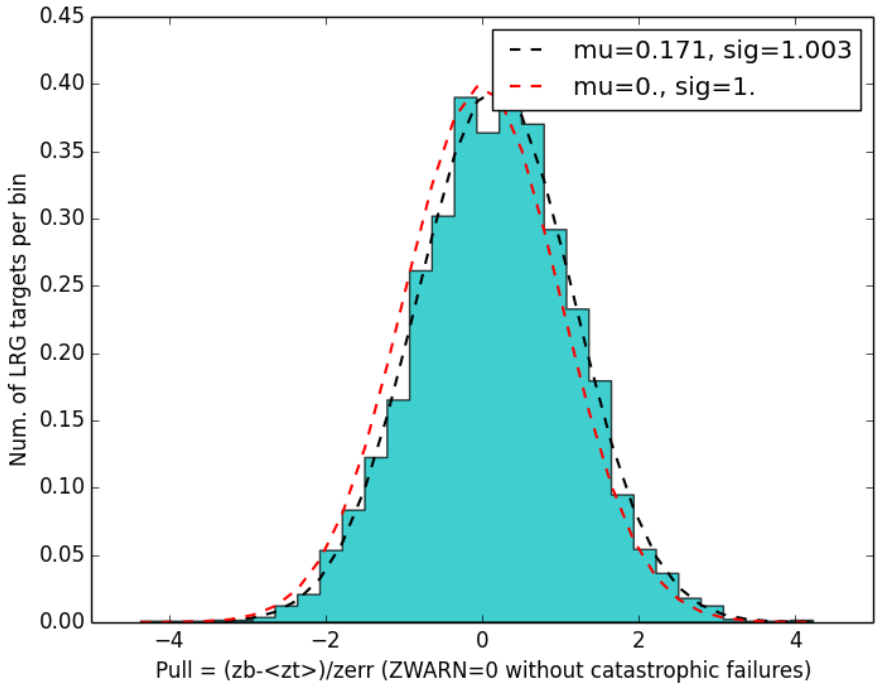
parsezbest.py

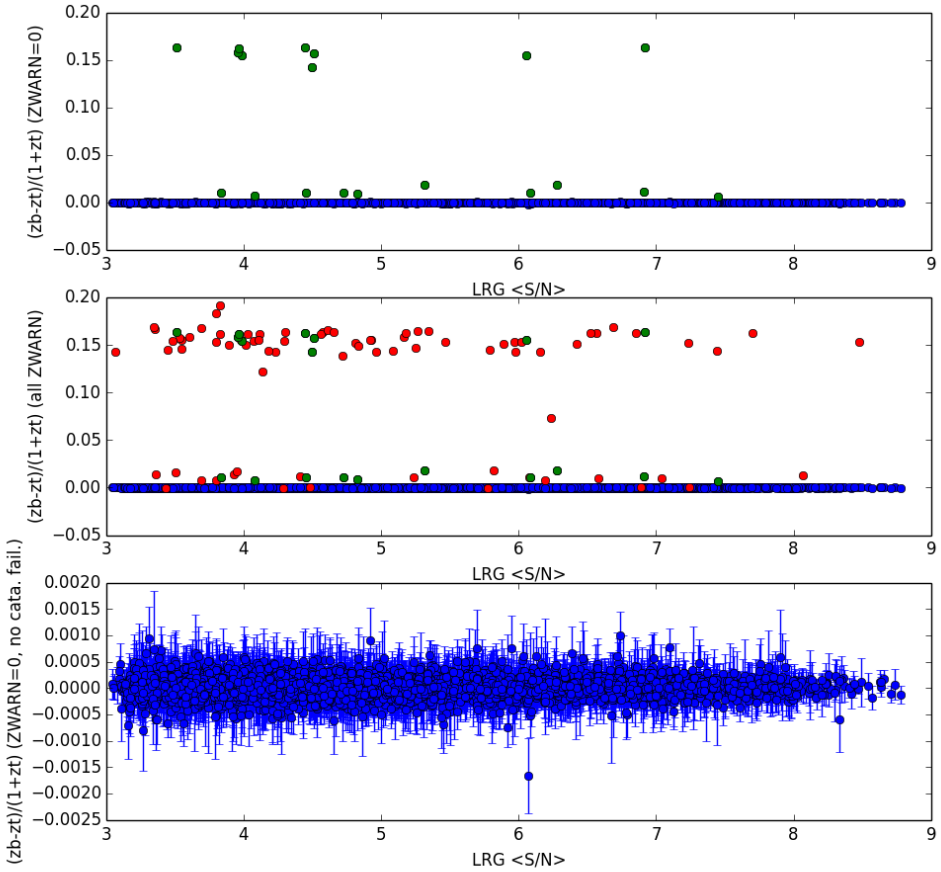
```
"""
    parsezbest.py computes common metrics and makes plots for
analyzing results of zdc1 redshift challenge (zbest file).

    Metrics:
    + dz = (zbest-ztrue)/(1+ztrue)
    + dv = c*dz
    + pull = (zbest-ztrue)/zerr
    + precision: sigma_z = std(dz), sigma_v = std(dv), nmad_z,
nmad_v
    + accuracy (bias): mu_z = mean(dz), mu_v = mean(dv)
    + efficiency
    + purity
    + % of catastrophic failures
    + FOM = purity*efficiency

    Results are stored in outfile (default
parezbest_results.dat)

    Plots:
    + Histograms dz, dv, pull
    + dz as a function of zt and zb for:
        - zwarn=0
        - zwarn=0 without catastrophic failures
        - zwarn!=0
    + dz as a function of average S/N per wavelegnth bin for:
        - zwarn=0
        - zwarn=0 without catastrophic failures
        - zwarn!=0

    Color code:
    + zwarn=0: blue filled circles
    + zwarn !=0: red filled circles
    + catastrophic failures: green filled circles

    """
```

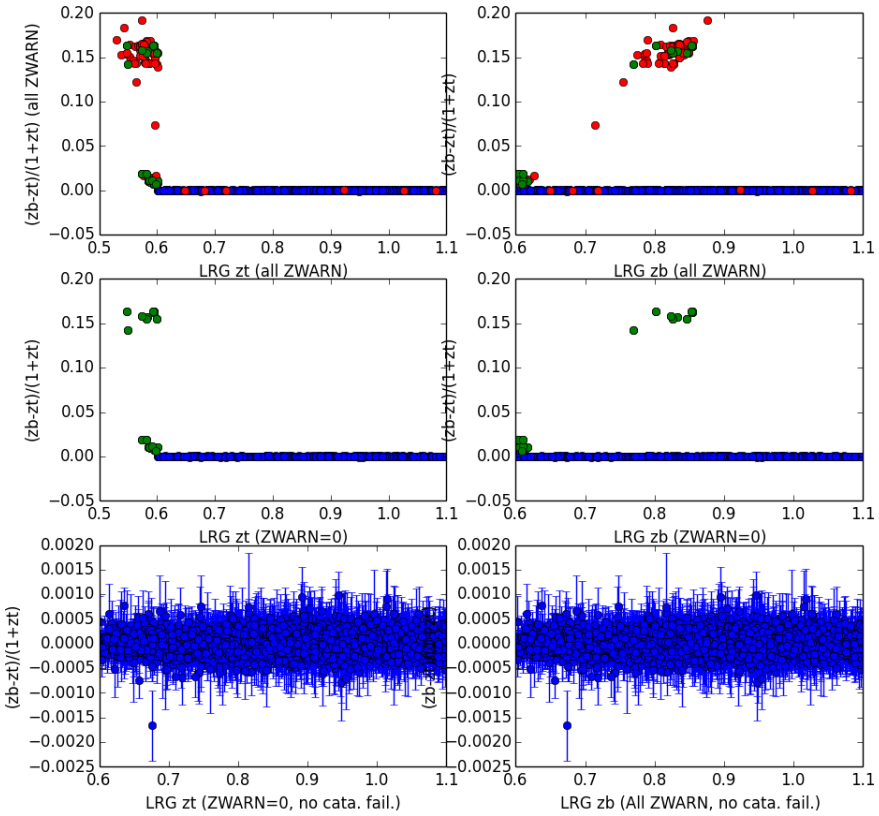
```
parsezbest.py
--b
/project/projectdirs/desi/datachallenge/zdc1/samples/training/
LRG/brick-b-lrg-5000.fits
--r
/project/projectdirs/desi/datachallenge/zdc1/samples/training/
LRG/brick-r-lrg-5000.fits
--z
/project/projectdirs/desi/datachallenge/zdc1/samples/training/
LRG/brick-z-lrg-5000.fits
--zbest
/project/projectdirs/desi/datachallenge/zdc1/govinda/redmonste
r/zbest-lrg-5000.fits
```


mu=24 *1e-6, sig=163 *1e-6
Num. of LRG targets per bin
3000
2500
2000
1500
1000
500
0
−0.0020
−0.0015
−0.0010
−0.0005
0.0000
0.0005
0.0010
(zb-zt)/(1+zt) (ZWARN=0 without catastrophic failures)


mu= 7, sig=49
Num. of LRG targets per bin
0.010
0.008
0.006
0.004
0.002
0.000
−500
−400
−300
−200
−100
0
100
200
300
Delta v = c(zb-zt)/(1+zt) [km/s] (ZWARN=0 without catastrophic failures)


mu=0.171, sig=1.003
mu=0., sig=1.
Num. of LRG targets per bin
Pull = (zb-<zt>)/zerr (ZWARN=0 without catastrophic failures)


(zb-zt)/(1+zt) (ZWARN=0)
(zb-zt)/(1+zt) (all ZWARN)
(zb-zt)/(1+zt) (ZWARN=0, no cata. fail.)
LRG <S/N>
LRG <S/N>
LRG <S/N>




parsezbest_results.dat

```
Using zbest file zbest-lrg-5000.fits
Using brick-b-lrg-5000.fits b brick
Using brick-r-lrg-5000.fits r brick
Using brick-z-lrg-5000.fits z brick

0 ELG found
5000 LRG found

=====================================
LRG: Precision and accuracy (zwarn=0)
=====================================
sigma_z: 0.006770, mu_z: 0.000336
NMAD_z: 0.000129
sigma_v: 2031.133618, mu_v: 100.847235
NMAD_v: 38.654146
sigma_z & sigma_v do not meet DESI requirements on precision
for LRG
mu_z & mu_v do not meet DESI requirements on bias for LRG

=====================================
LRG: Precision and accuracy
zwarn=0 without catastrophic failures
=====================================
```

```
sigma_z: 0.000163, mu_z: 0.000024
sigma_v: 49.002931, mu_v: 7.257300

====================================
LRG: Pull (zwarn=0, no cata. fail.)
====================================
mu: 0.171209, sigma: 1.002503

====================================
LRG: Total sample
====================================
Efficiency: 4902/5000=0.980400
Purity: 4902/4921=0.996139
Catastrophic failures: 19/5000=0.003800
FOM: 0.980400 x 0.996139=0.976615
====================================

0 QSO found
0 QSO_BAD found
0 STAR found
```