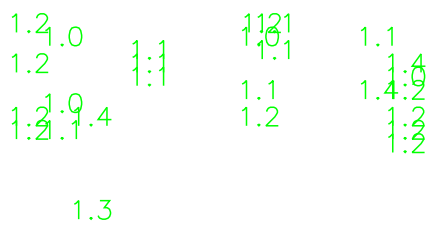
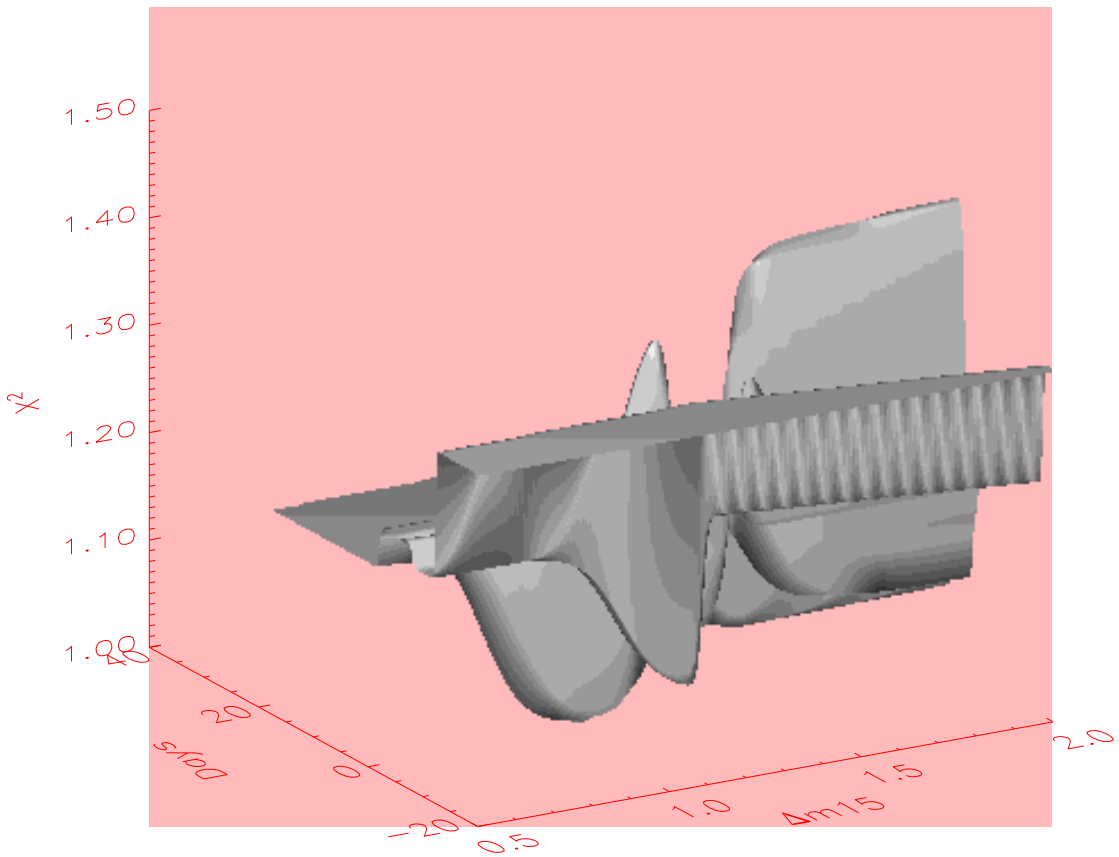
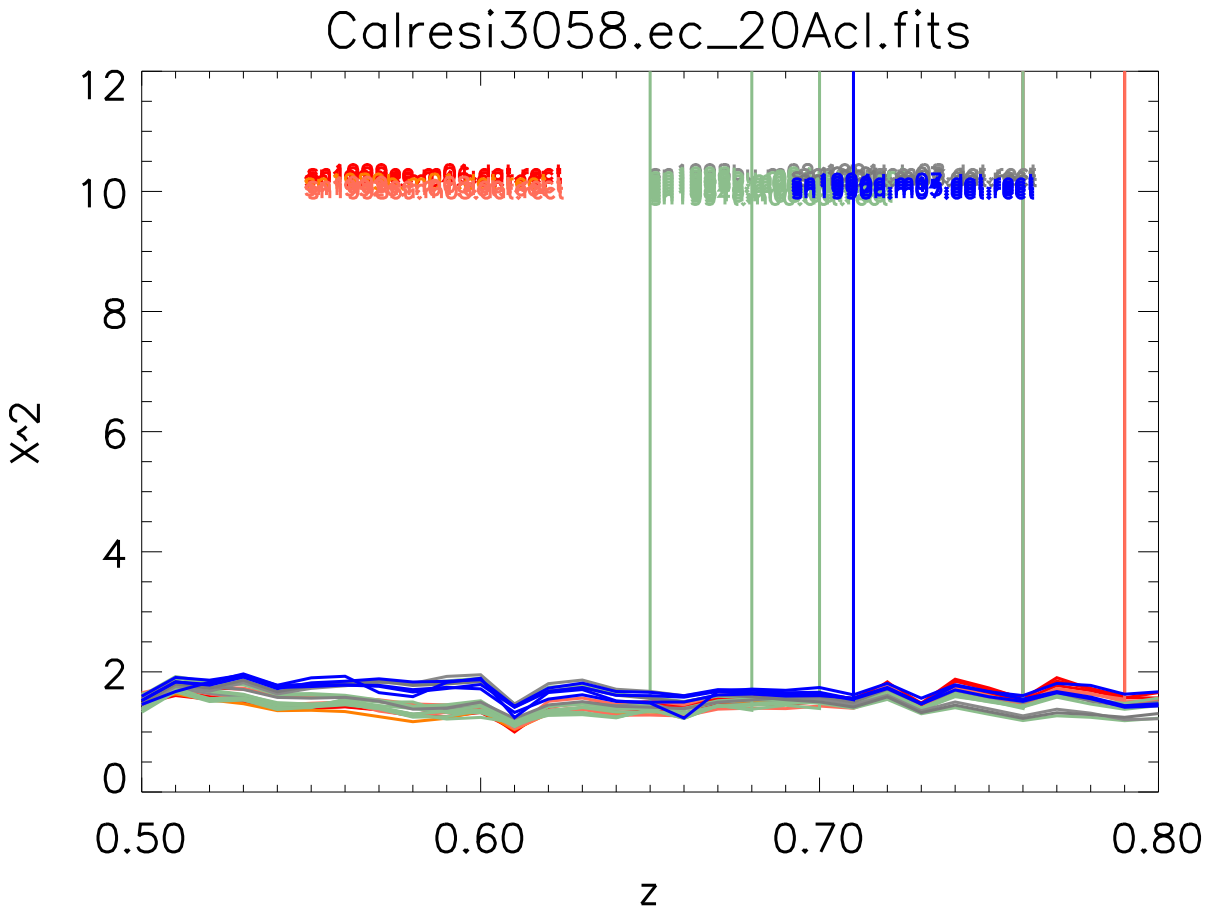
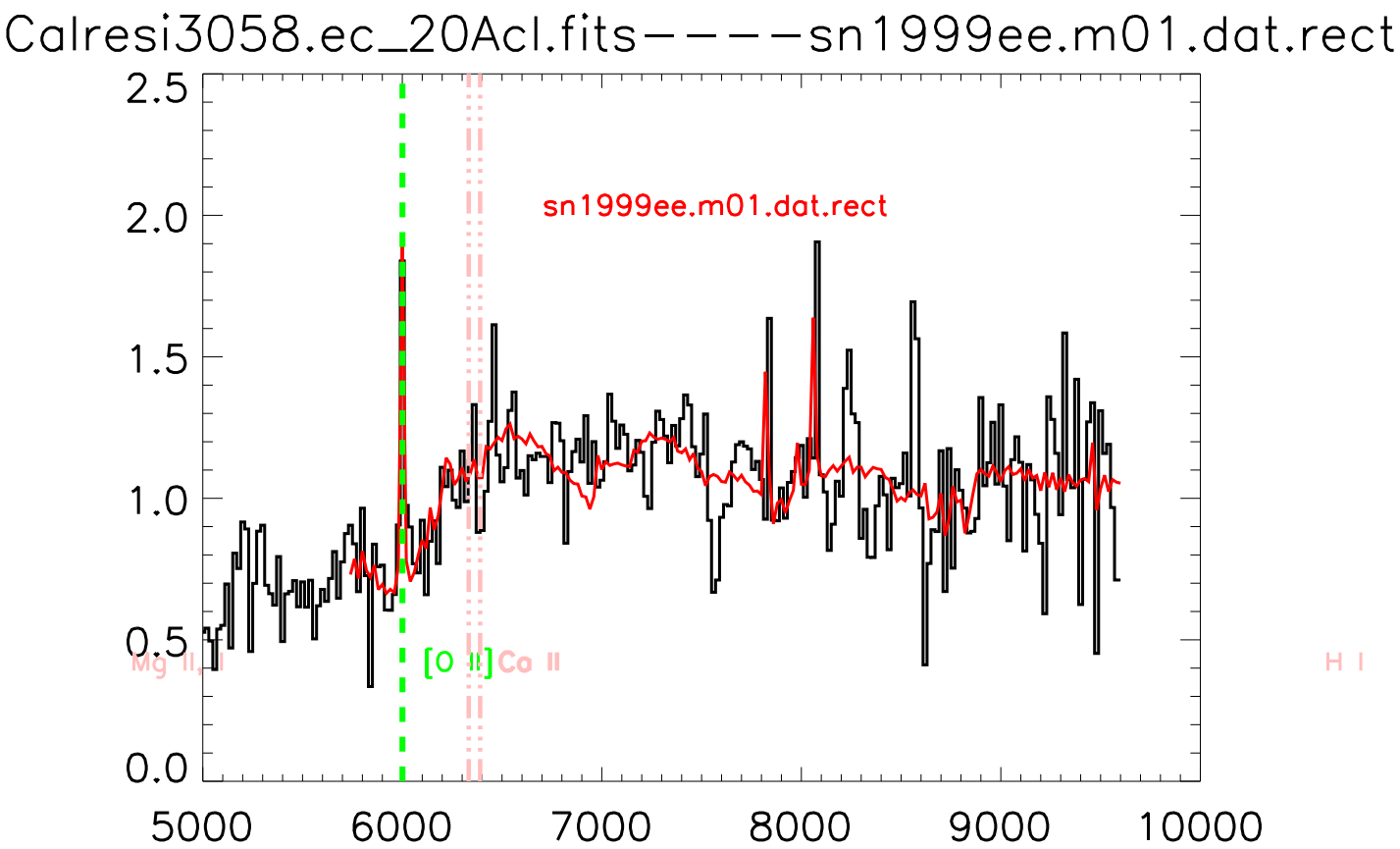
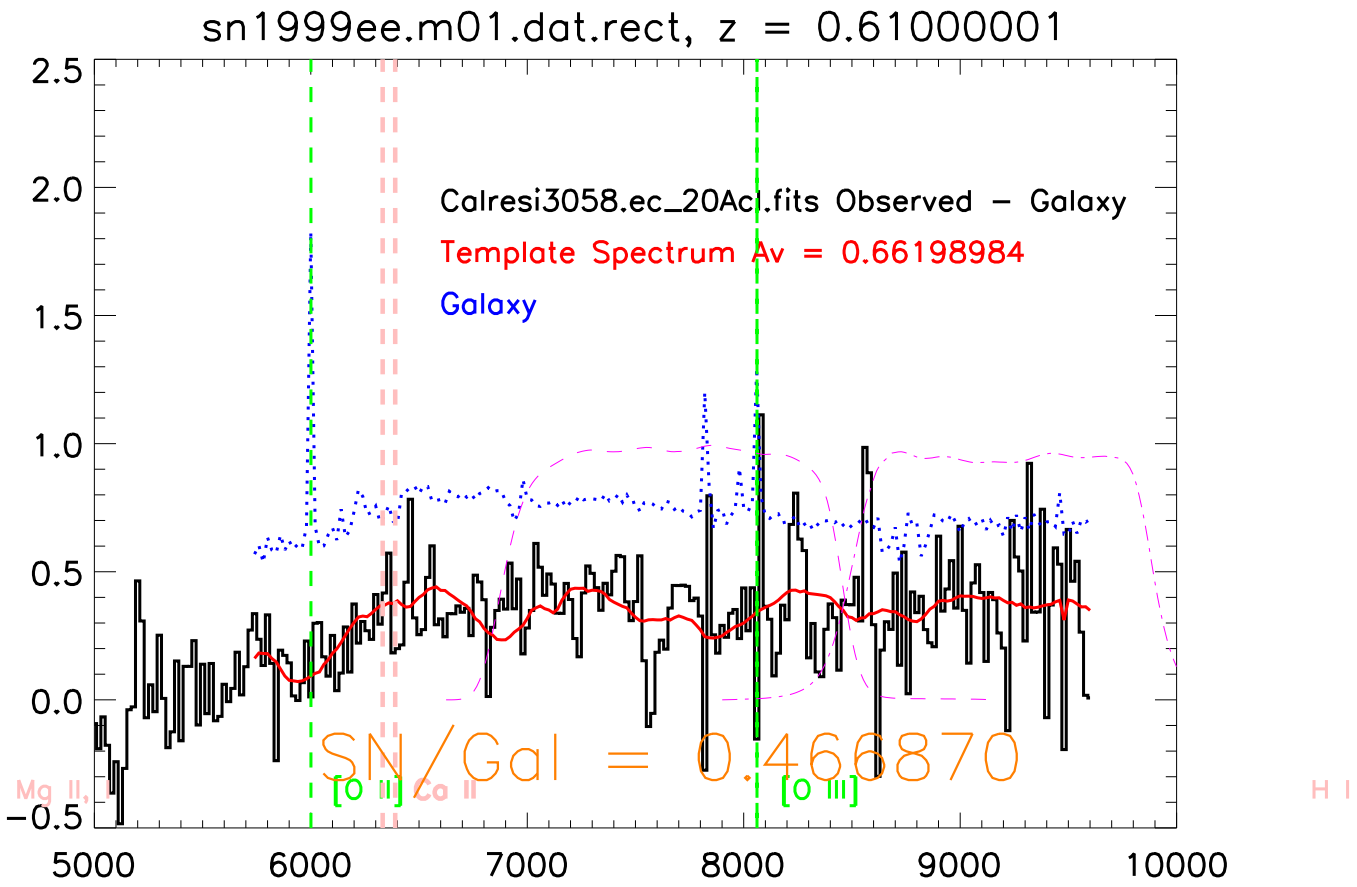


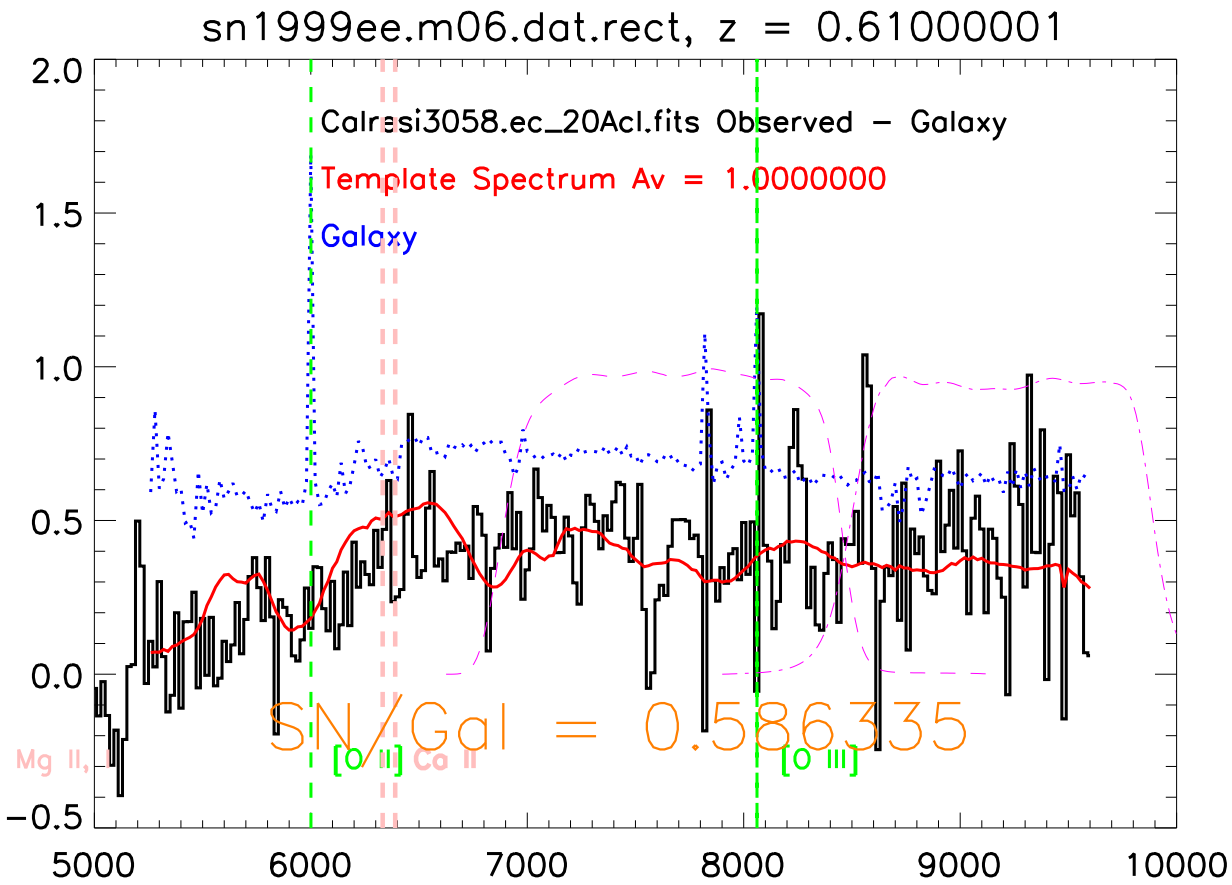


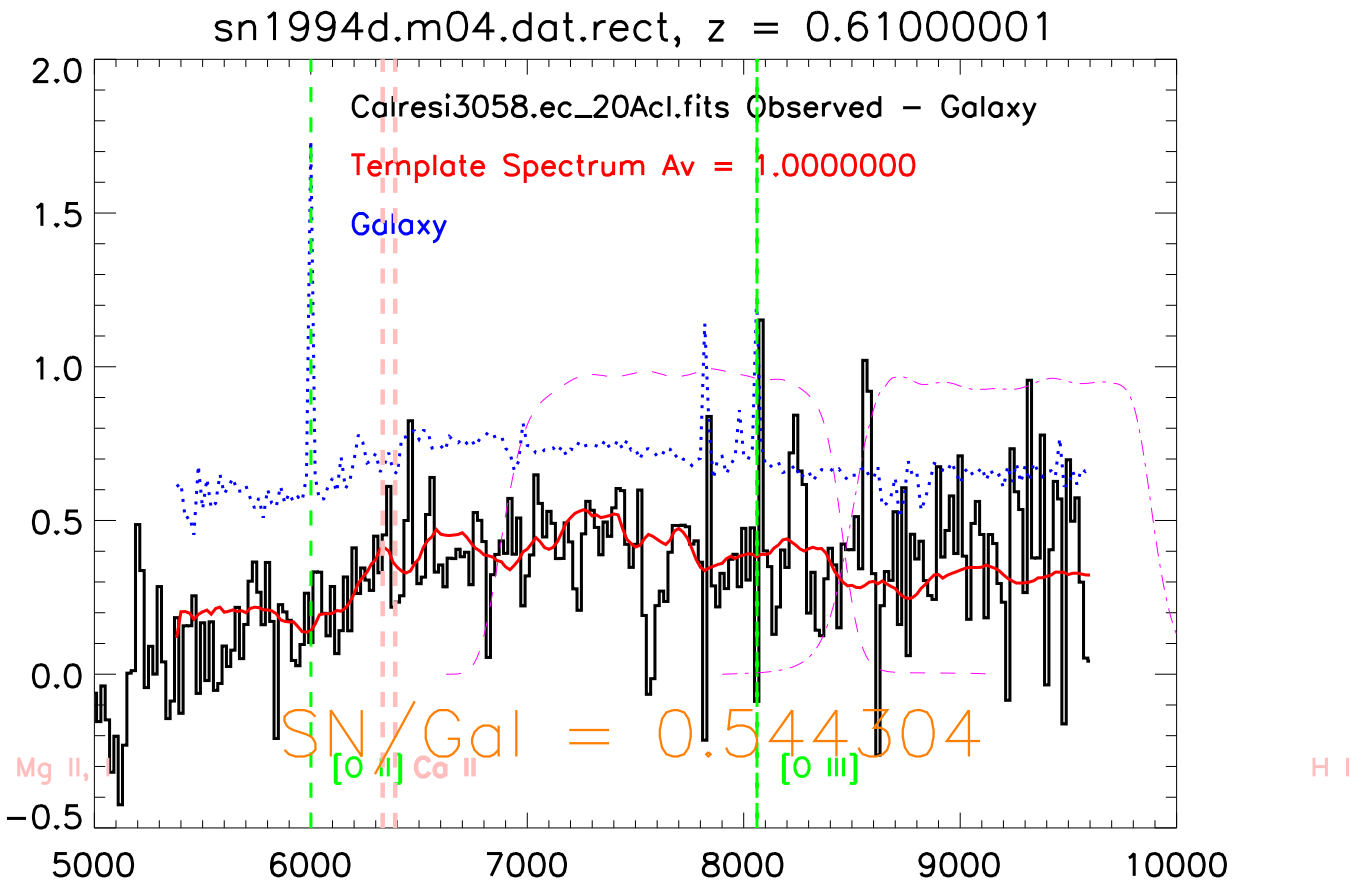
1.50
1.40
1.30
1.20
1.10
1.00
$\chi^2$
40
20
0
−20
Days
0.5
1.0
1.5
2.0
Δm15


Calresi3058.ec_20Acl.fits
12
10
8
6
4
2
0
X^2
0.50
0.60
0.70
0.80
z


Calresi3058.ec_20Acl.fits----sn1999ee.m01.dat.rect
sn1999ee.m01.dat.rect
[O II]
Ca II
H I
2.5
2.0
1.5
1.0
0.5
0.0
5000
6000
7000
8000
9000
10000


sn1999ee.m01.dat.rect, z = 0.61000001
Calresi3058.ec_20Ac1.fits Observed − Galaxy
Template Spectrum Av = 0.66198984
Galaxy
SN/Gal = 0.466870
[O II]
Ca II
[O III]
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000
10000


sn1999ee.m06.dat.rect, z = 0.61000001
Calresi3058.ec_20Acl.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = 0.586335
[O II]
Ca II
[O III]
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000
10000


sn1994d.m04.dat.rect, z = 0.61000001
Calresi3058.ec_20Acl.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = 0.544304
[O II]
Ca II
[O III]
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
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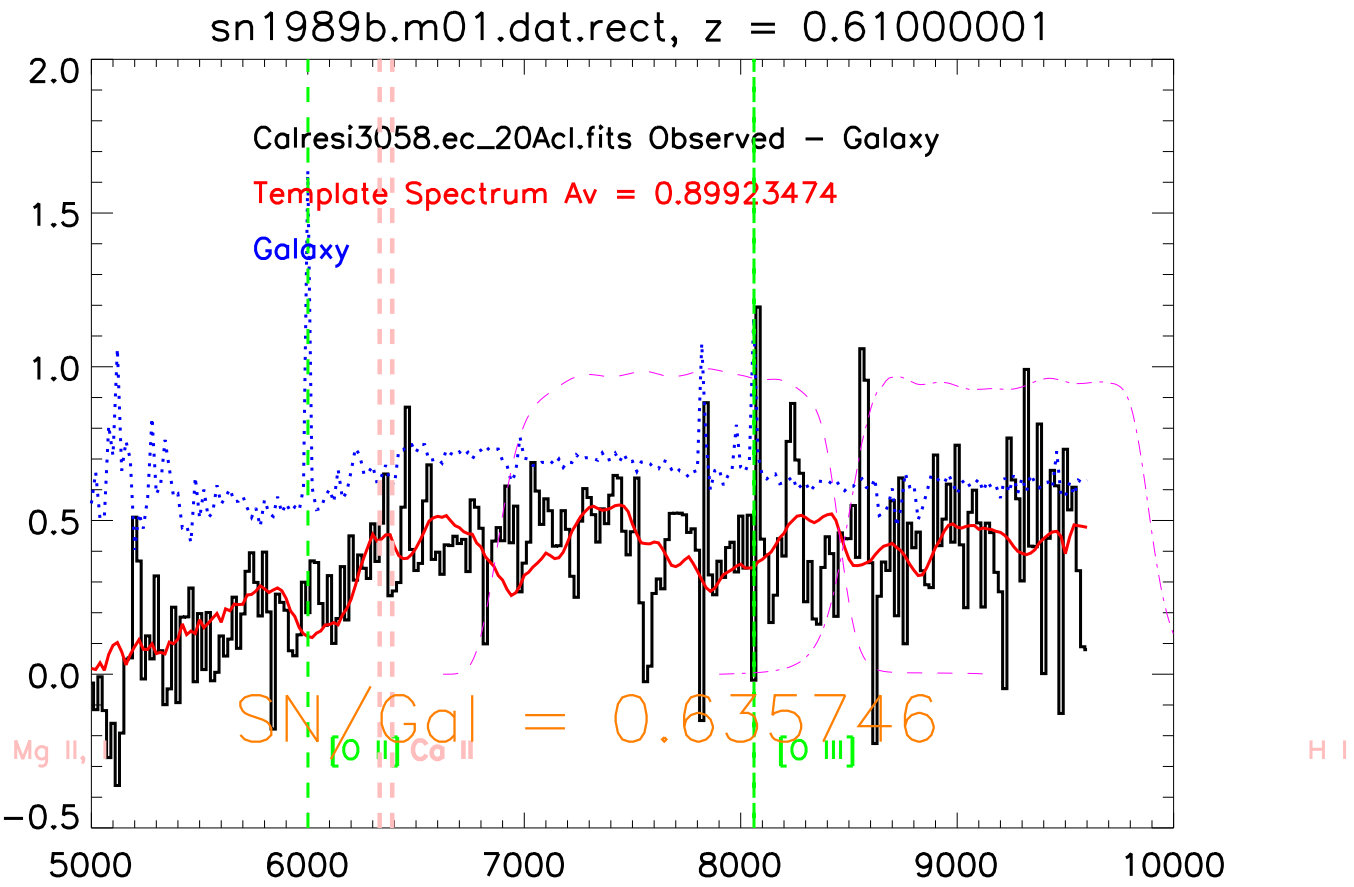
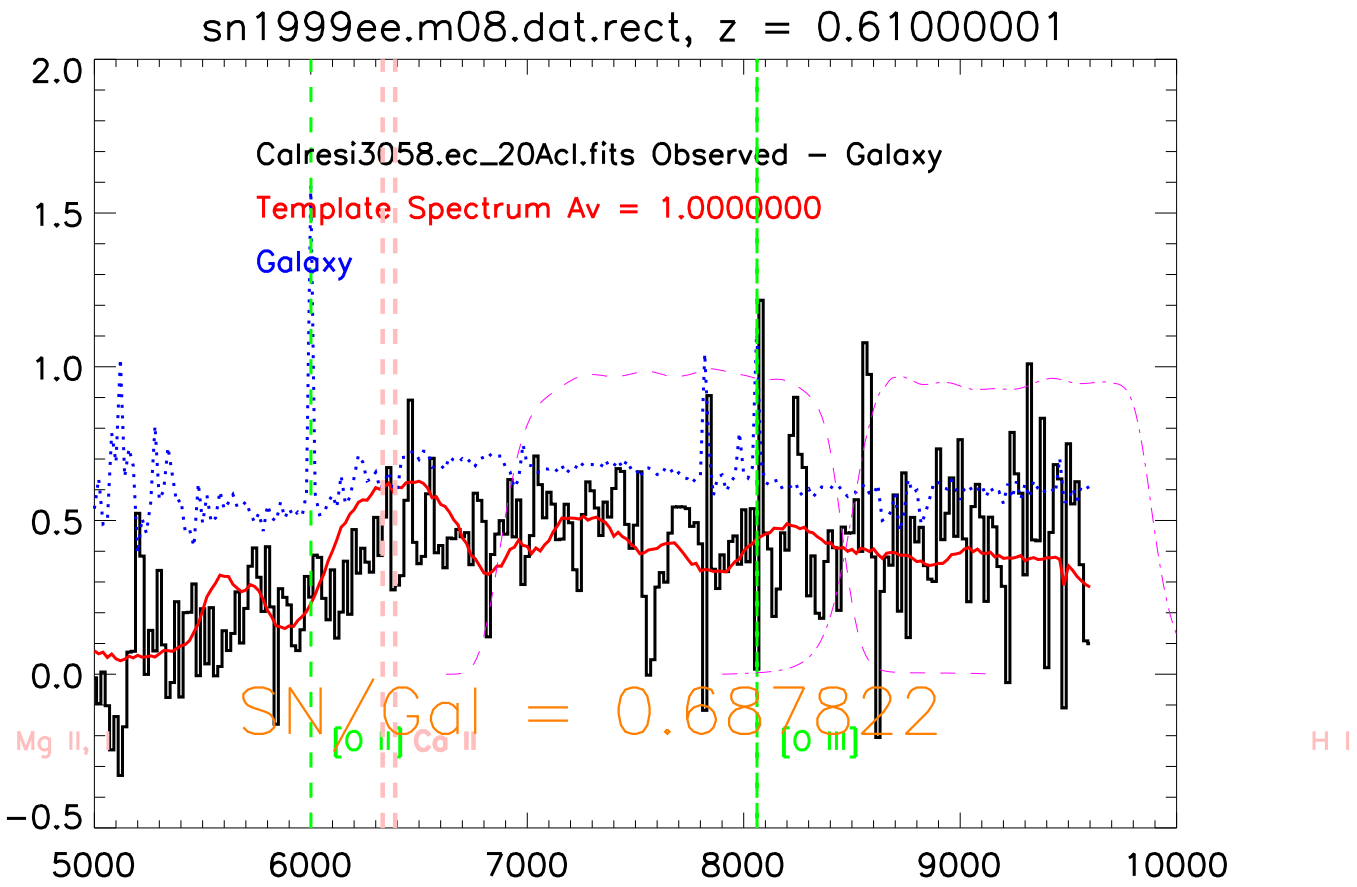
8000
9000
10000


sn1989b.m01.dat.rect, z = 0.61000001
Calresi3058.ec_20Acl.fits Observed − Galaxy
Template Spectrum Av = 0.89923474
Galaxy
SN/Gal = 0.635746
[O II]
Ca II
[O III]
H I
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000
10000


sn1999ee.m08.dat.rect, z = 0.61000001
Calresi3058.ec_20Acl.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = 0.687822
[O II]
Ca II
[O III]
Mg II,
H I
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
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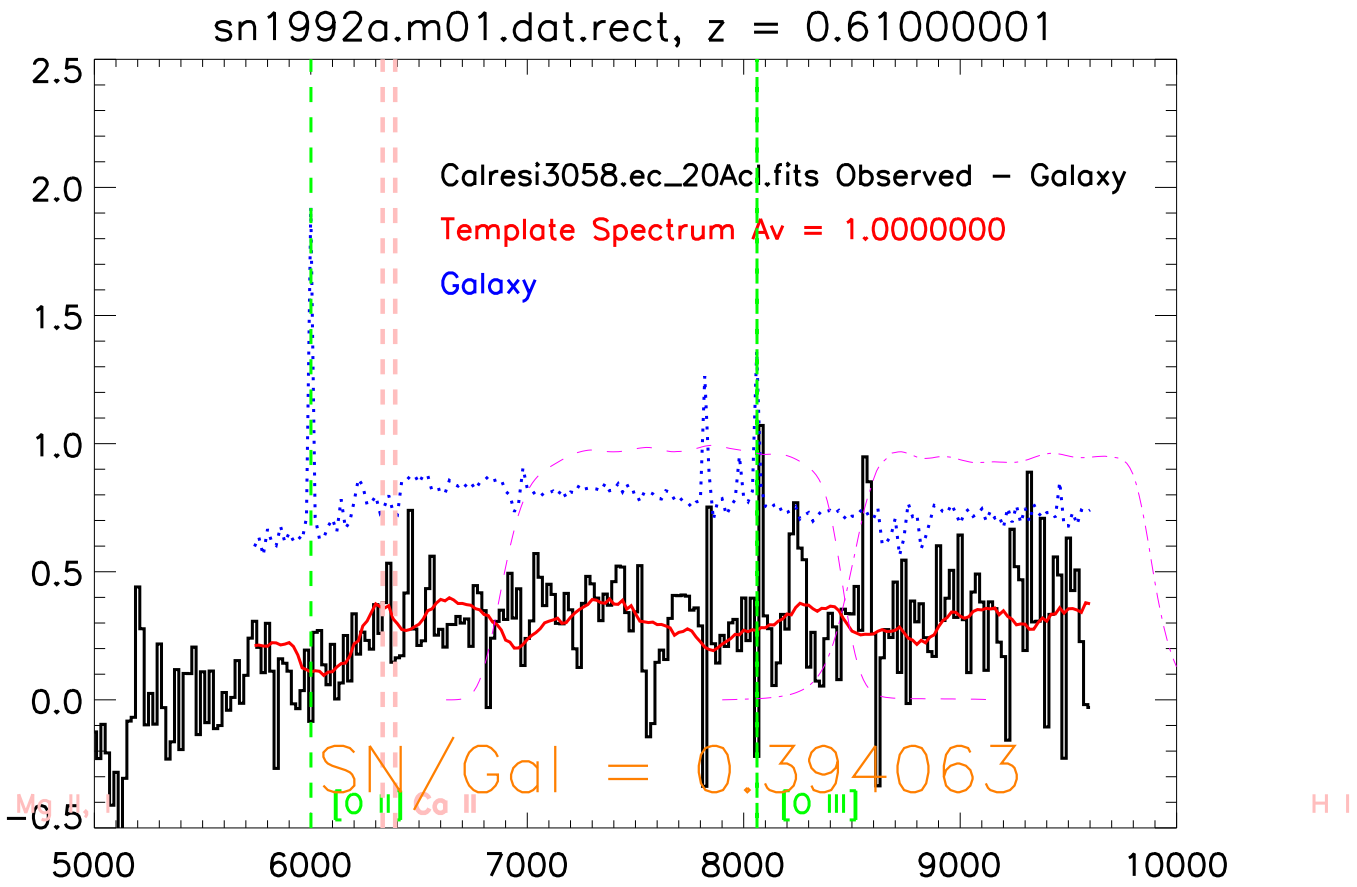
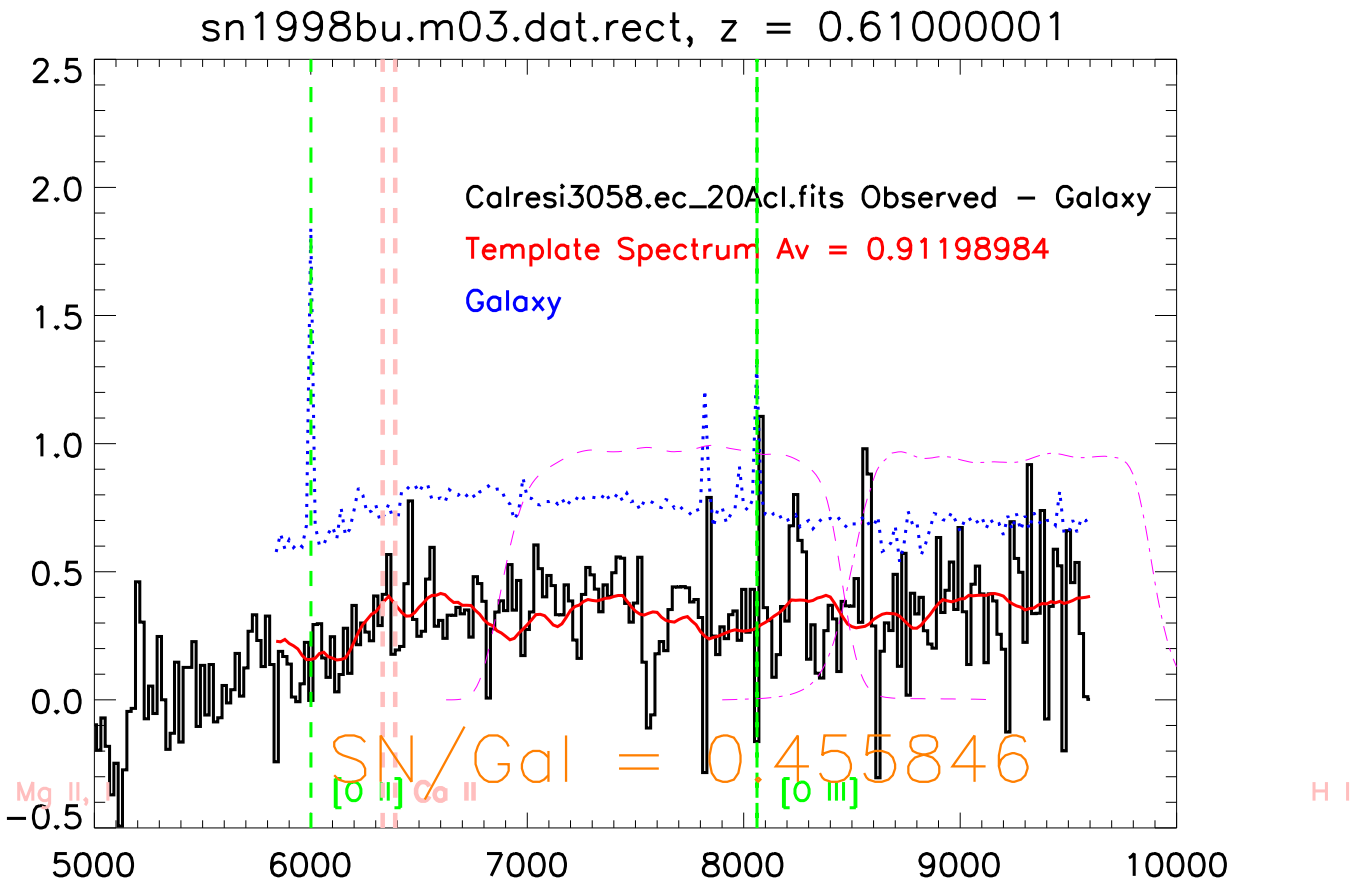
8000
9000
10000


sn1992a.m01.dat.rect, z = 0.61000001
Calresi3058.ec_20Acl.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = 0.394063
[O II]
Ca II
[O III]
H I
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000
10000


sn1998bu.m03.dat.rect, z = 0.61000001
Calresi3058.ec_20Acl.fits Observed − Galaxy
Template Spectrum Av = 0.91198984
Galaxy
SN/Gal = 0.455846
[O II]
Ca II
[O III]
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
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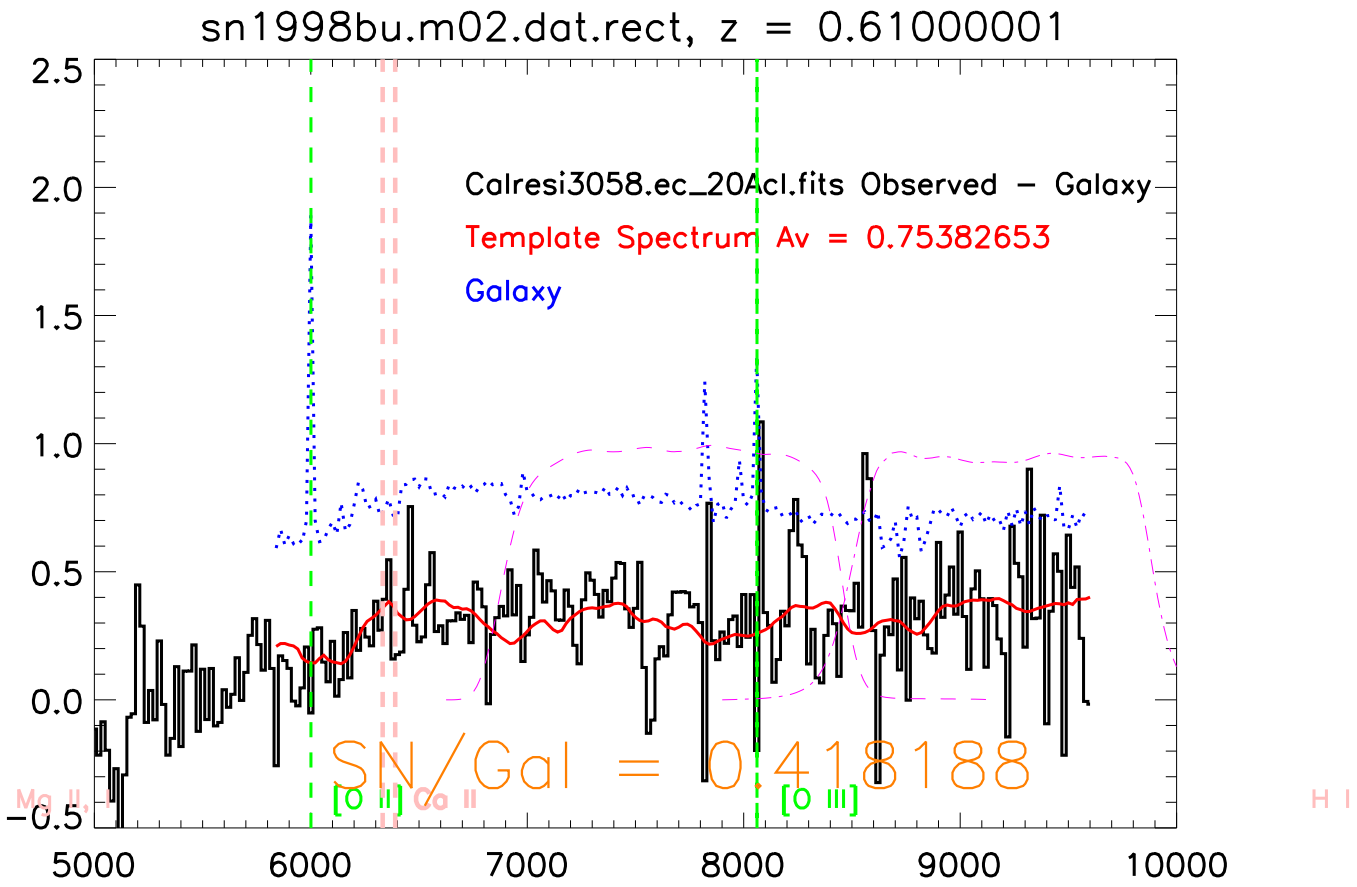
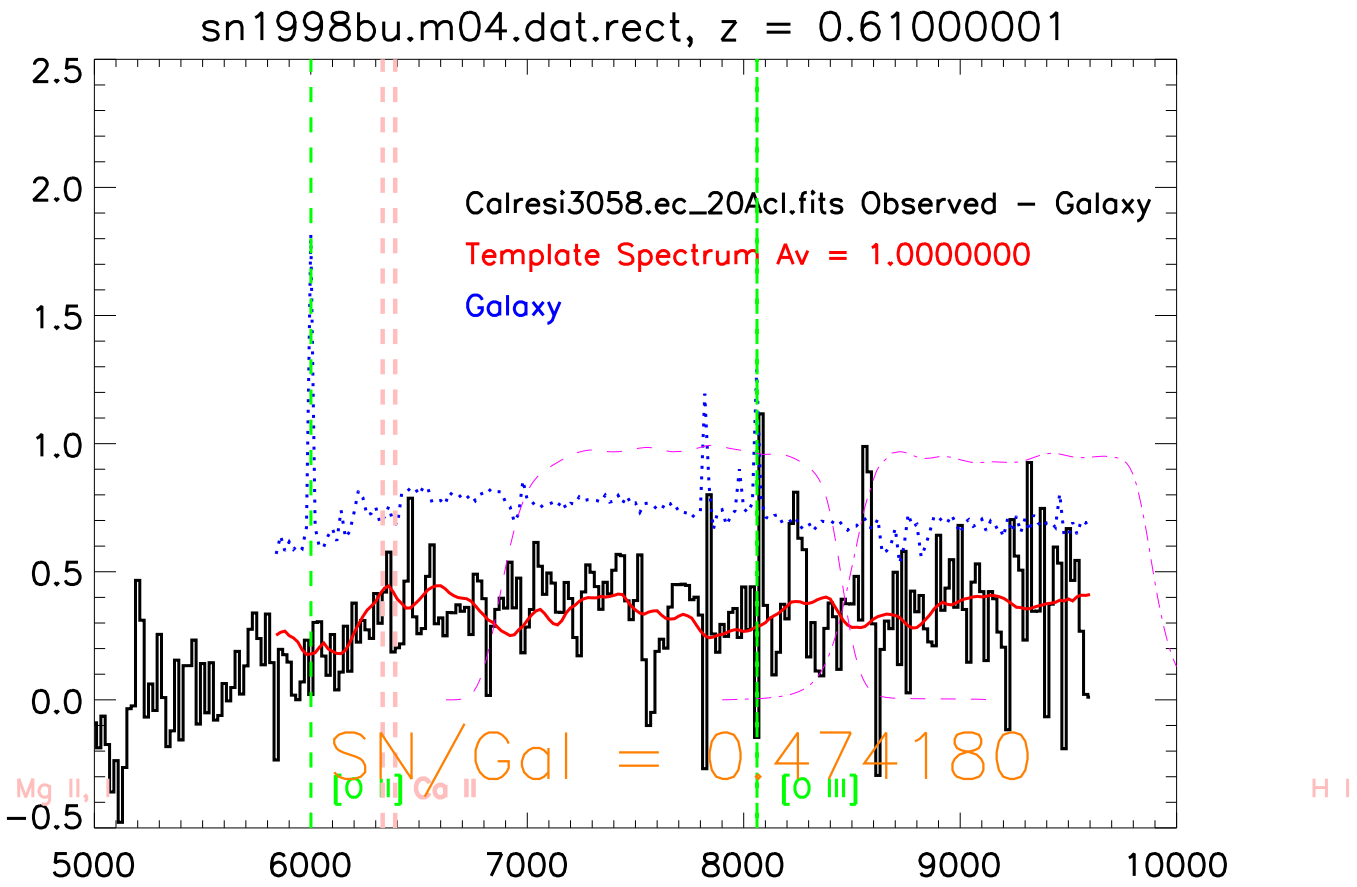
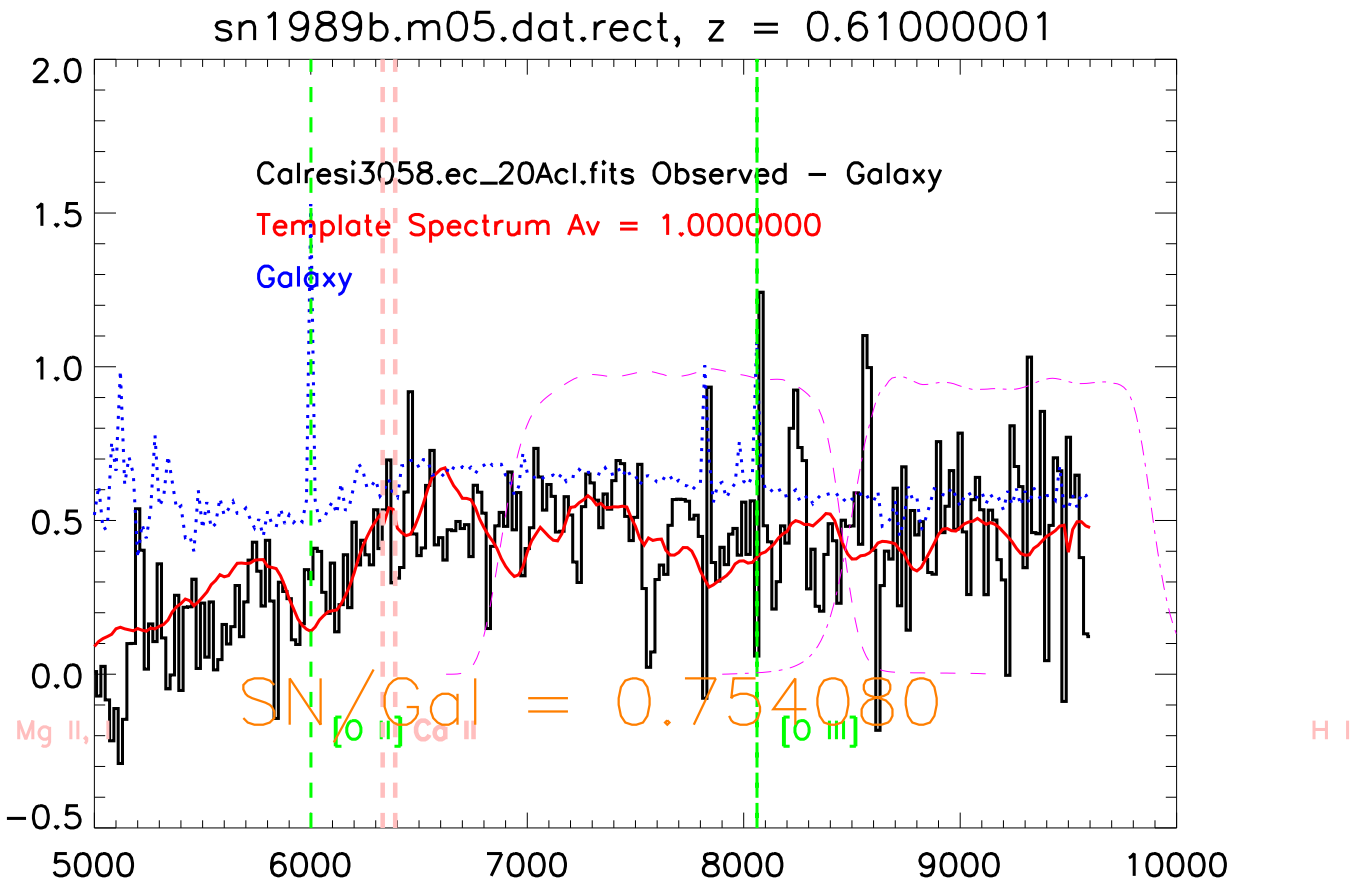
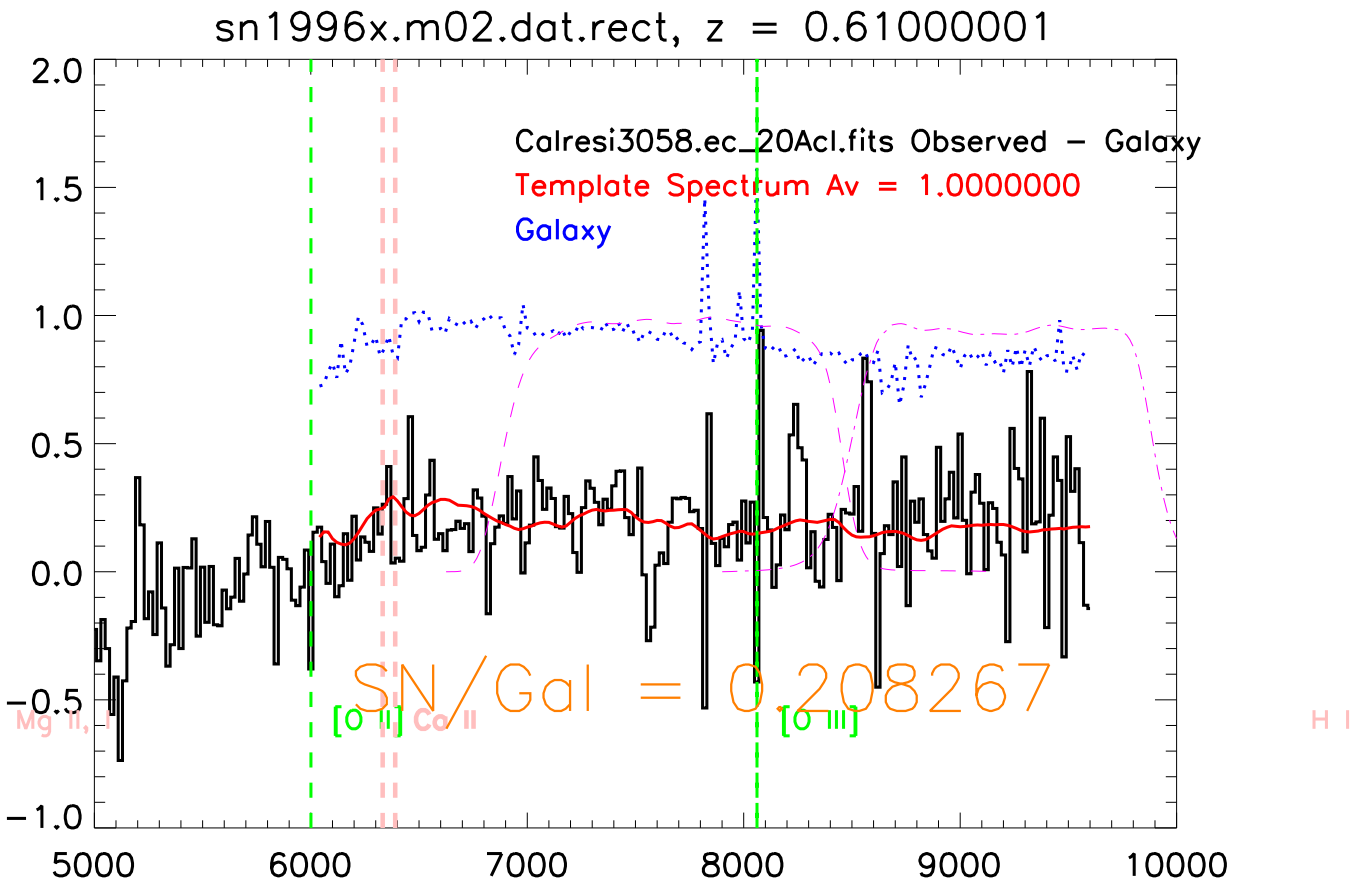
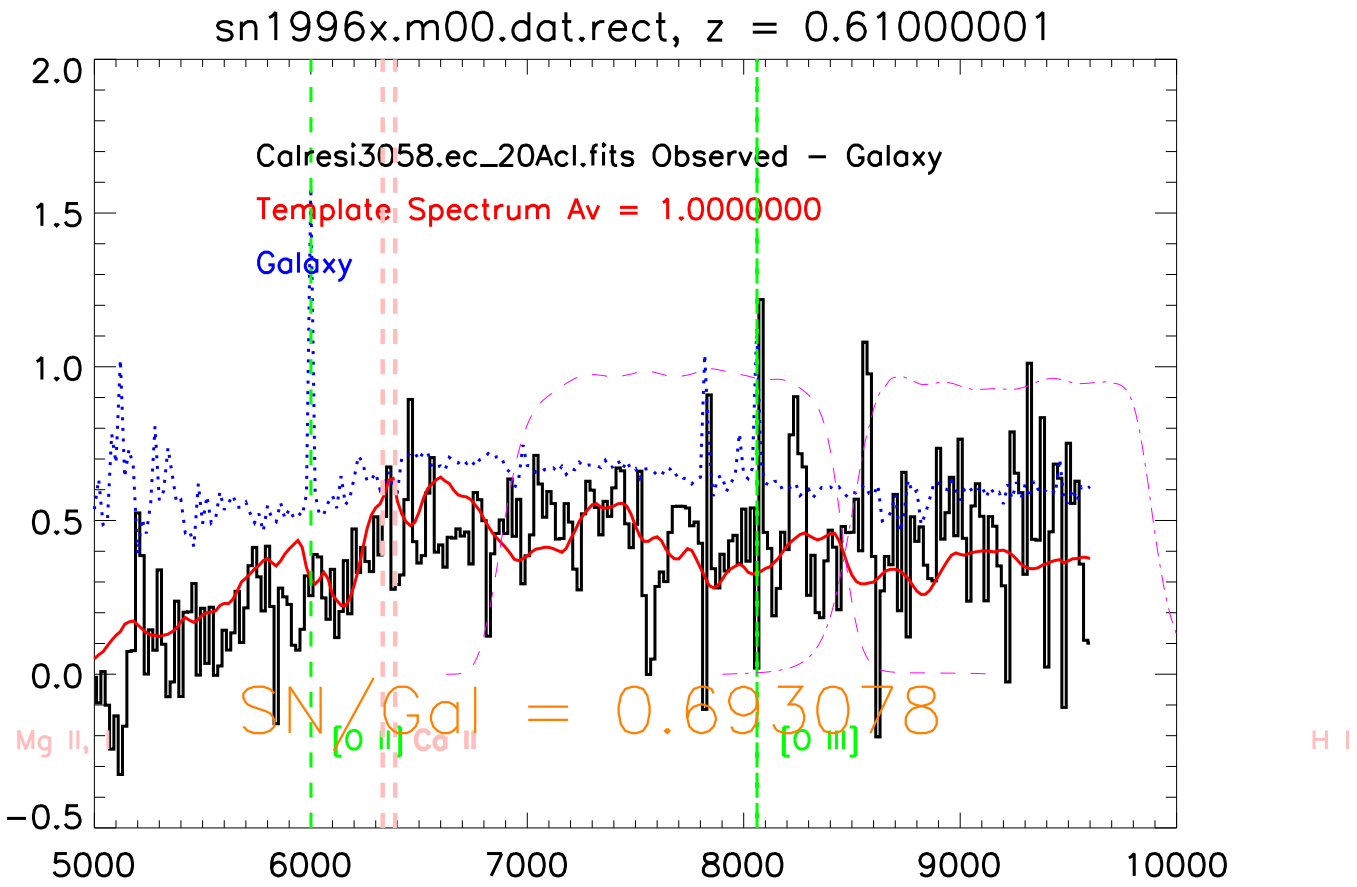
6000
7000
8000
9000
10000

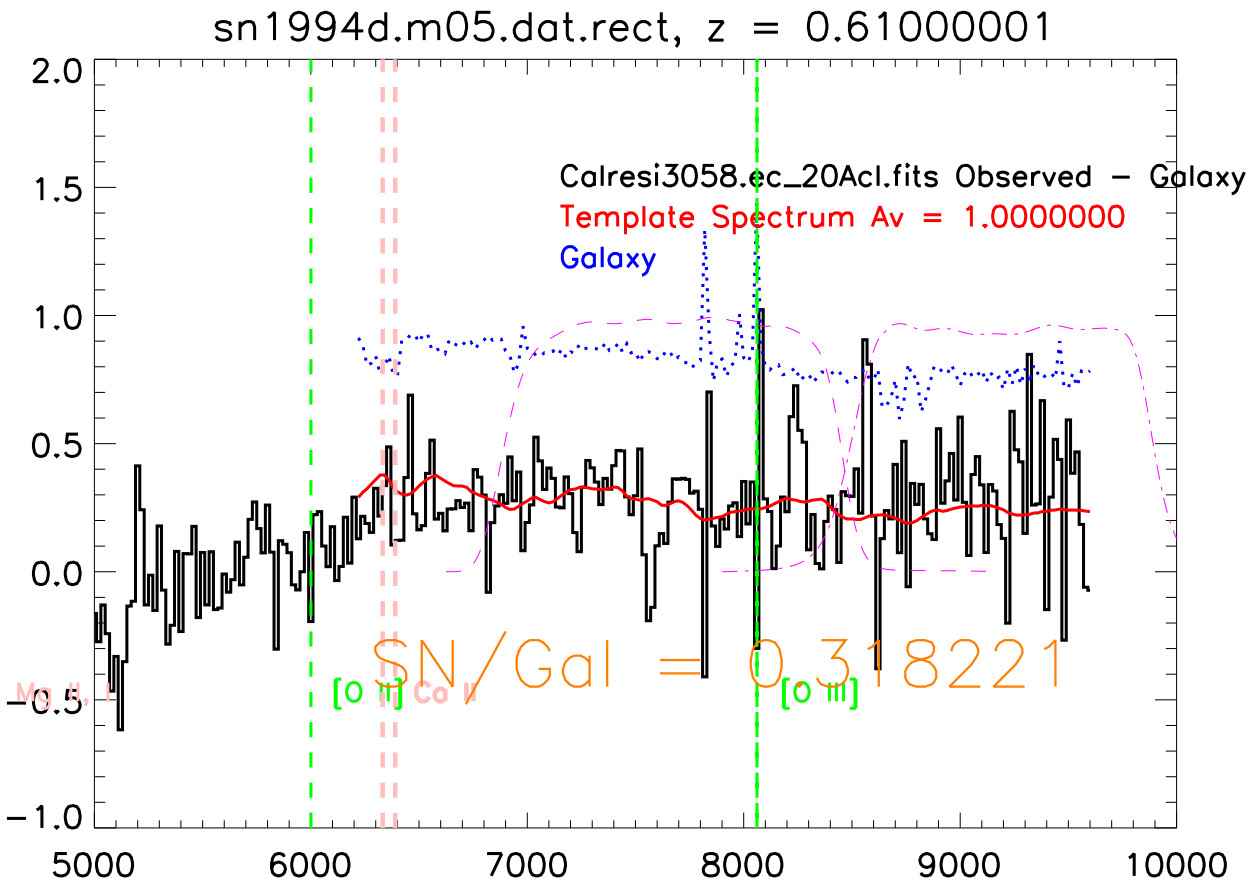

sn1998bu.m02.dat.rect, z = 0.61000001
Calresi3058.ec_20Acl.fits Observed − Galaxy
Template Spectrum Av = 0.75382653
Galaxy
SN/Gal = 0.418188
[O II]
Ca II
[O III]
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000
10000

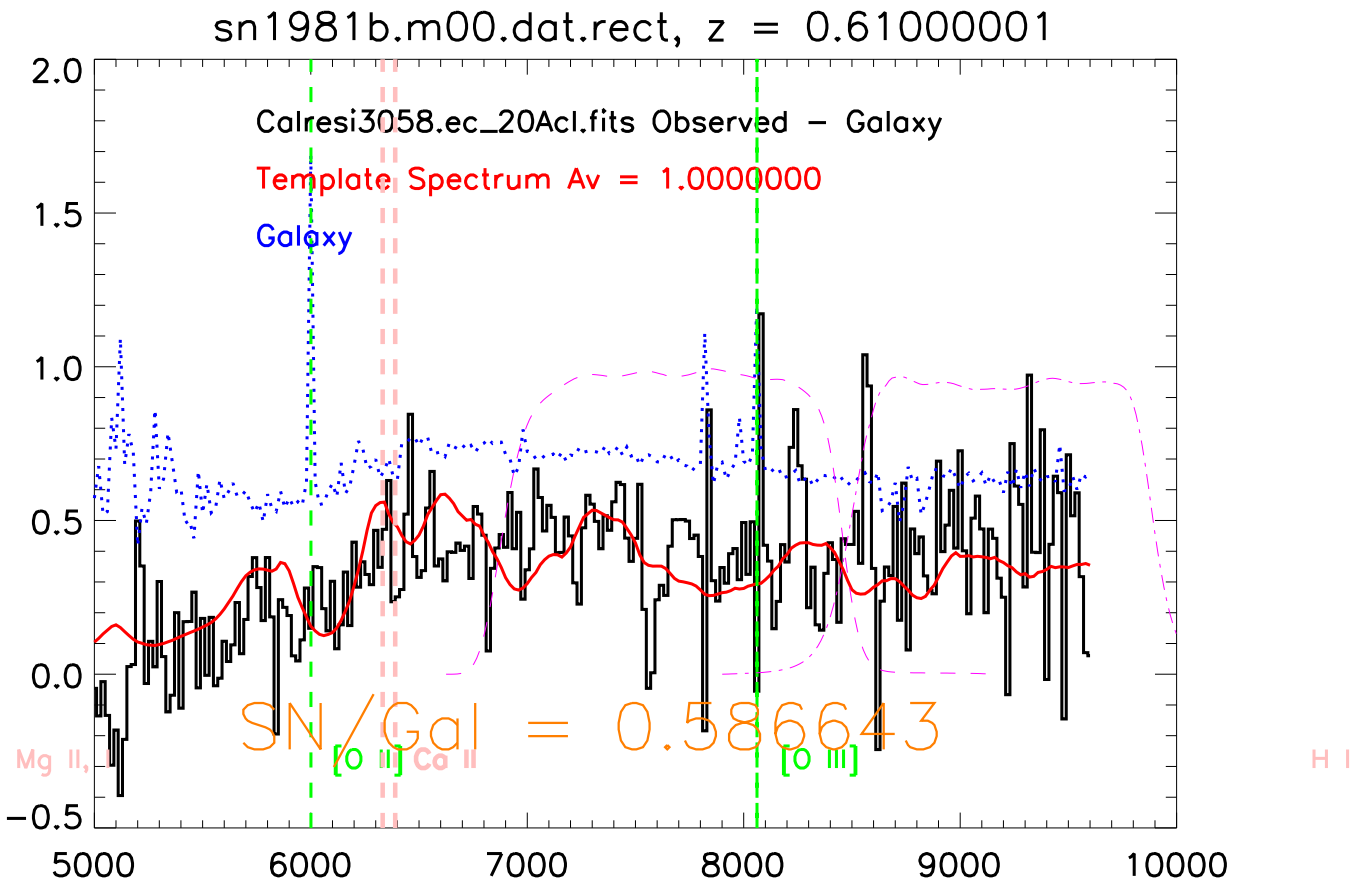

sn1998bu.m04.dat.rect, z = 0.61000001
Calresi3058.ec_20Acl.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = 0.474180
[O II]
Ca II
[O III]
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000
10000

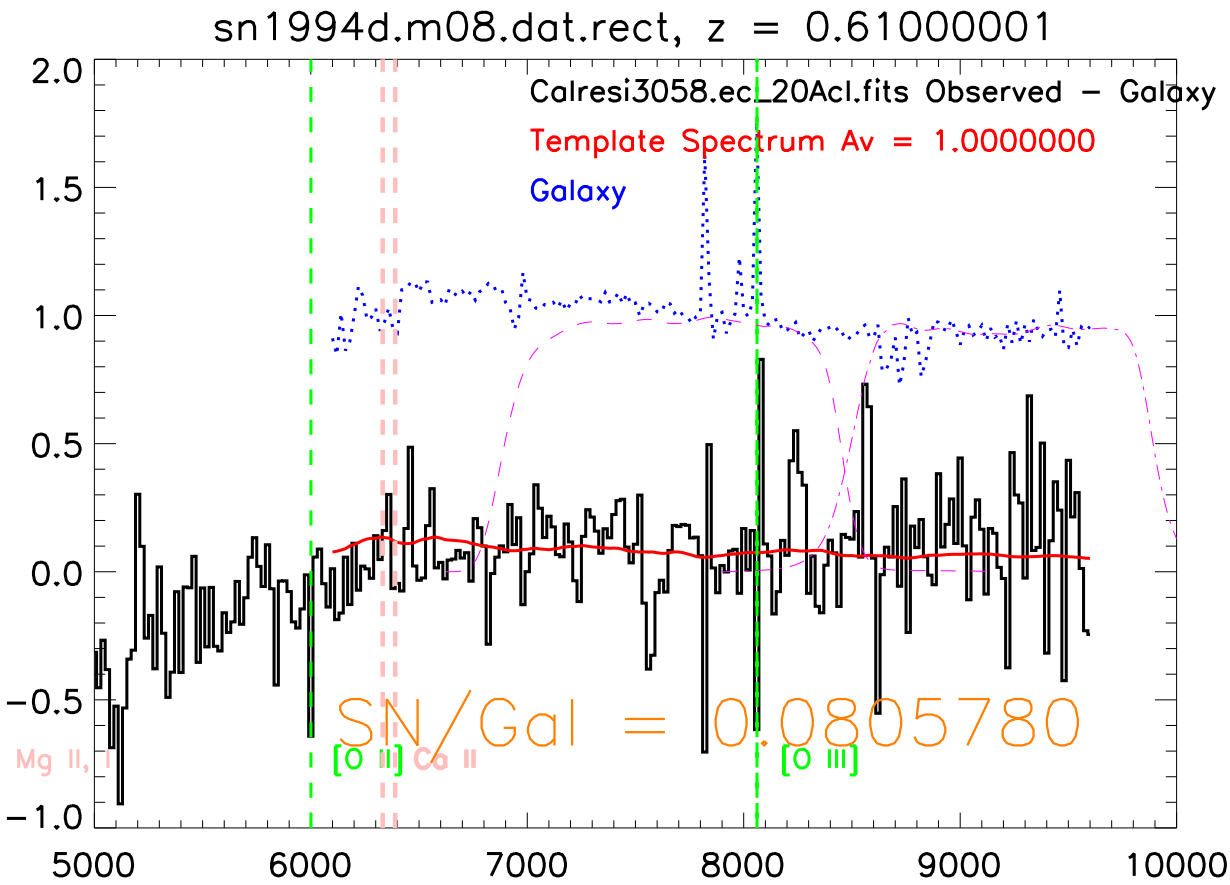

sn1989b.m05.dat.rect, z = 0.61000001
Calresi3058.ec_20Acl.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = 0.754080
[O II]
Ca II
[O III]
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000
10000

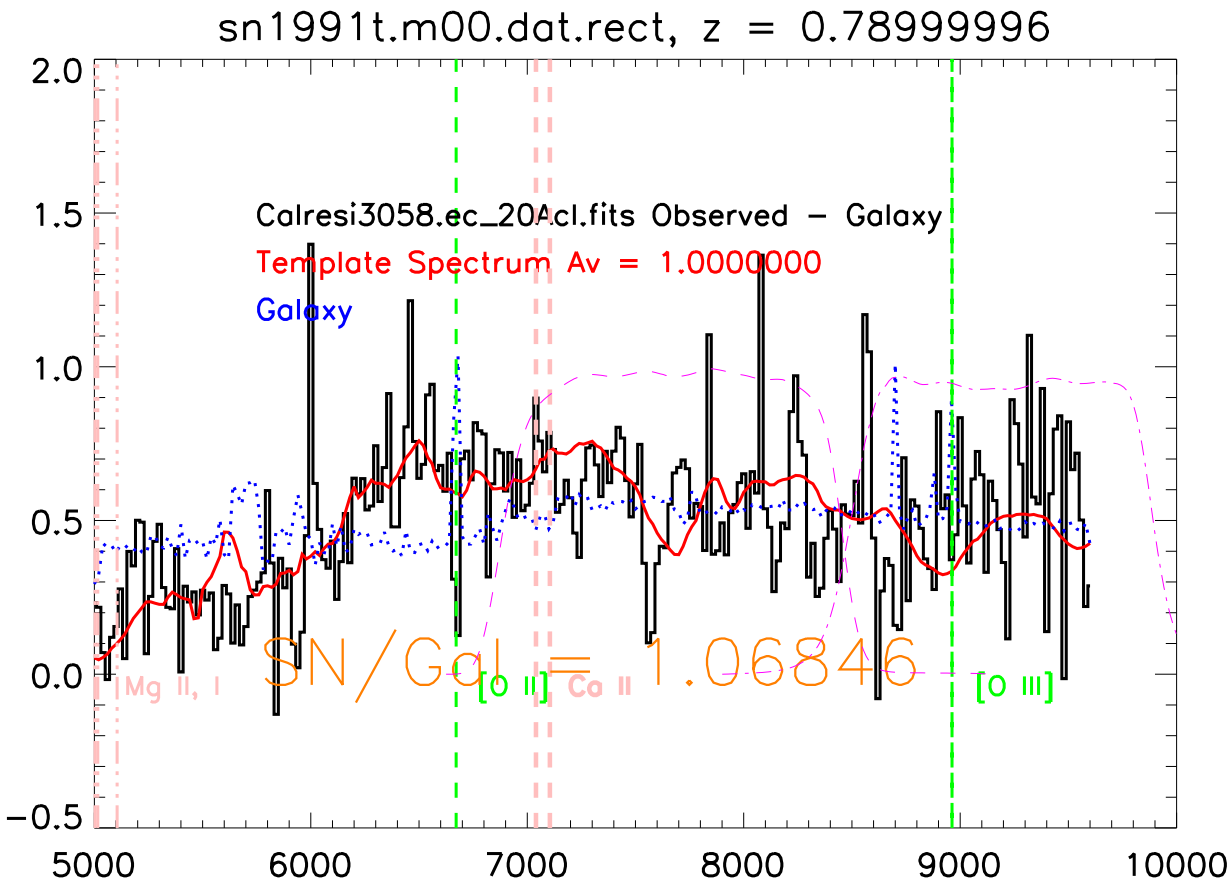

sn1996x.m02.dat.rect, z = 0.61000001
Calresi3058.ec_20Acl.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = 0.208267
[O II] Ca II
[O III]
2.0
1.5
1.0
0.5
0.0
−0.5
−1.0
5000
6000
7000
8000
9000
10000

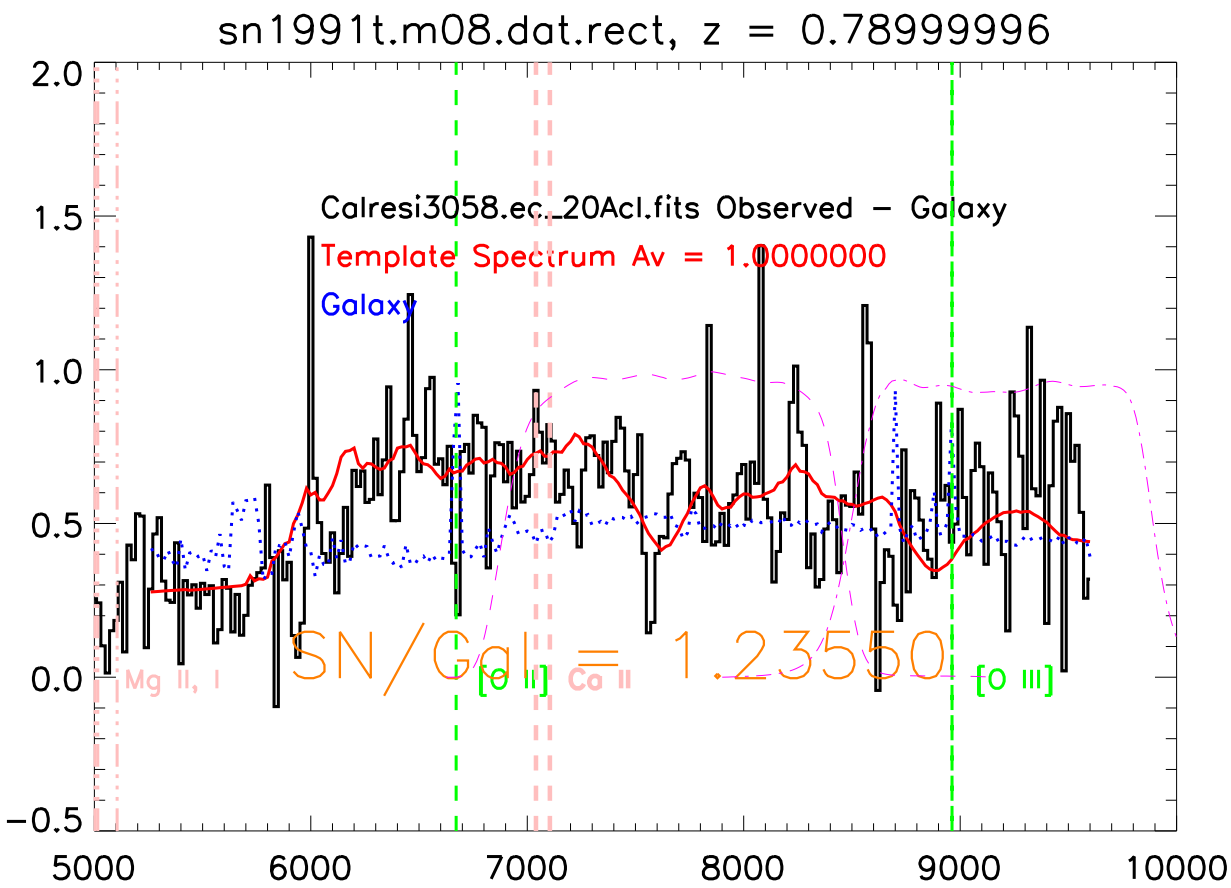

sn1996x.m00.dat.rect, z = 0.61000001
Calresi3058.ec_20Acl.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = 0.693078
[O II]
Ca II
[O III]
H I
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000
10000

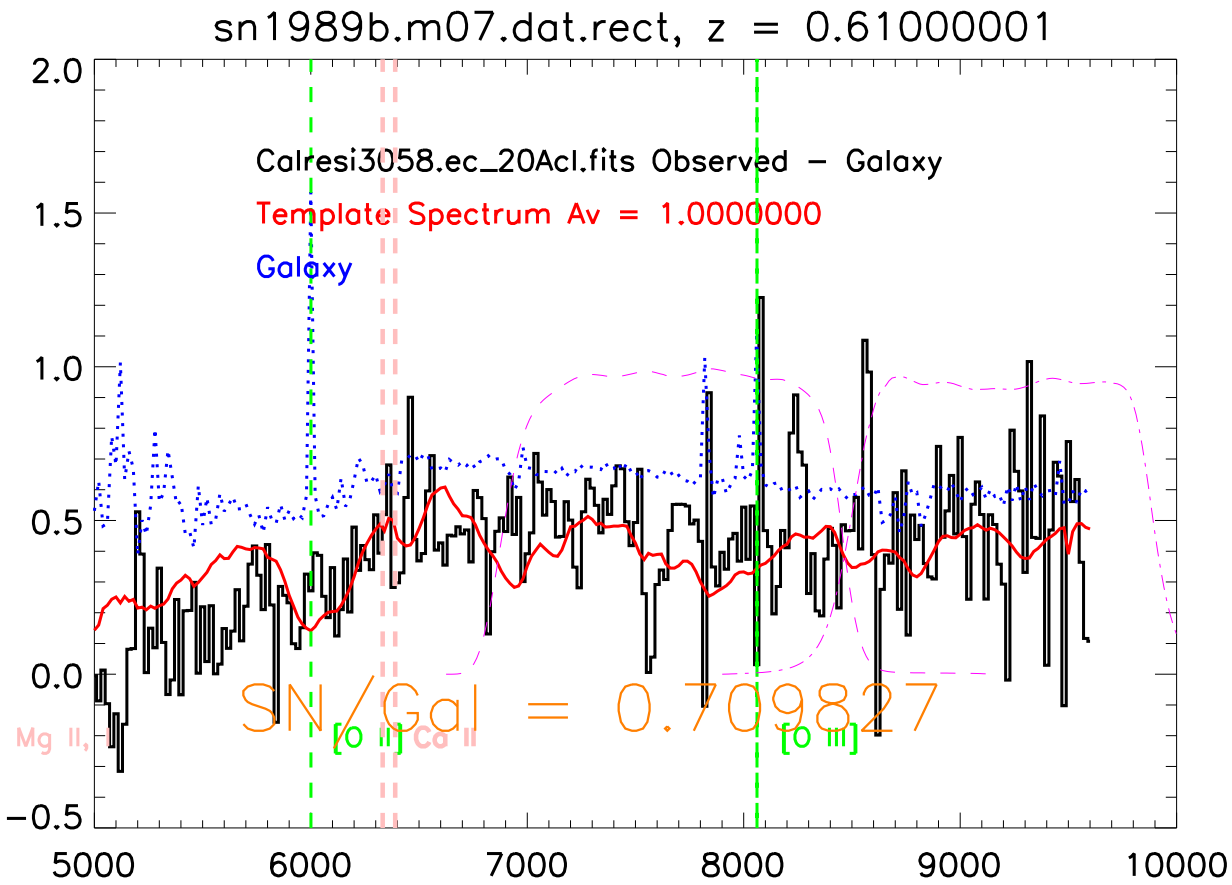

sn1994d.m05.dat.rect, z = 0.61000001
Calresi3058.ec_20Acl.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = 0.318221
[O II]
[O III]
2.0
1.5
1.0
0.5
0.0
−0.5
−1.0
5000
6000
7000
8000
9000
10000

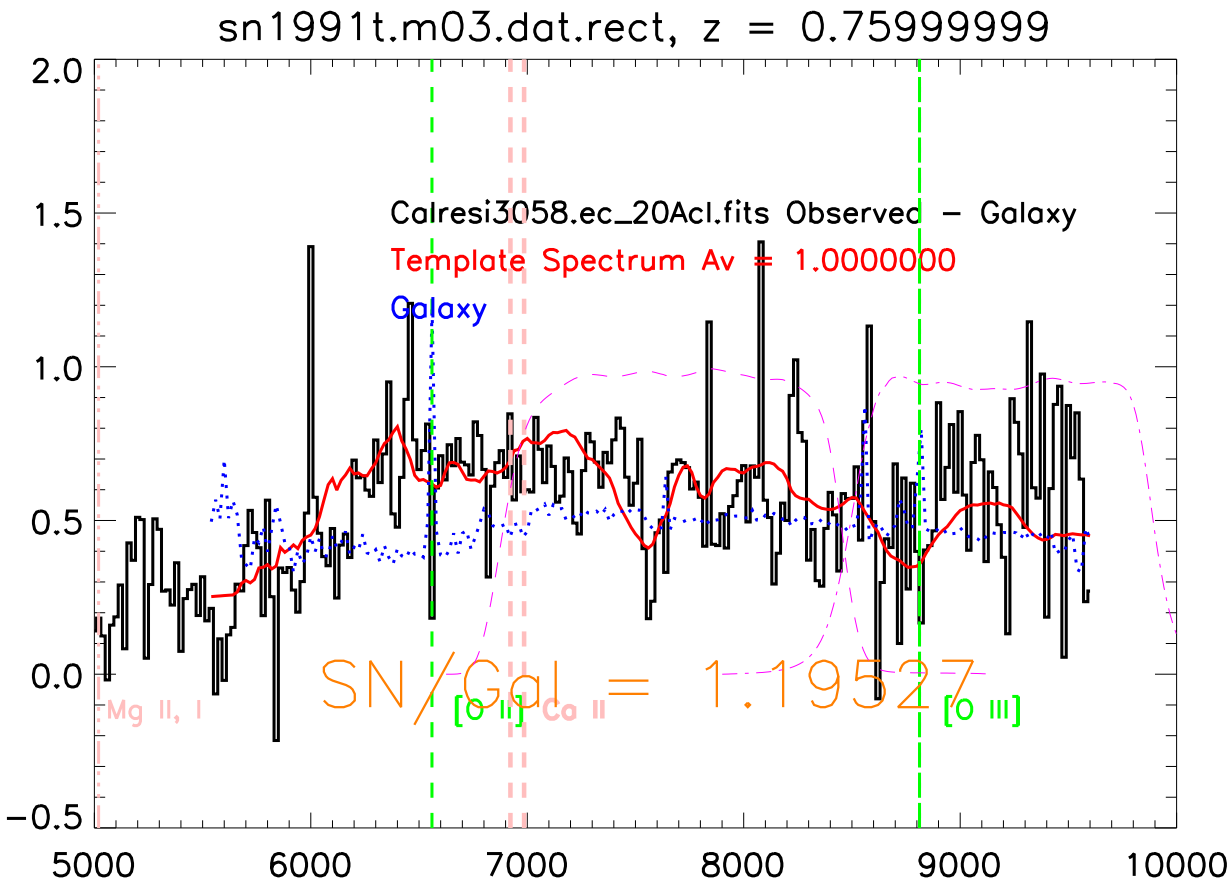

sn1981b.m00.dat.rect, z = 0.61000001
Calresi3058.ec_20Acl.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = 0.586643
[O II]
Ca II
[O III]
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000
10000

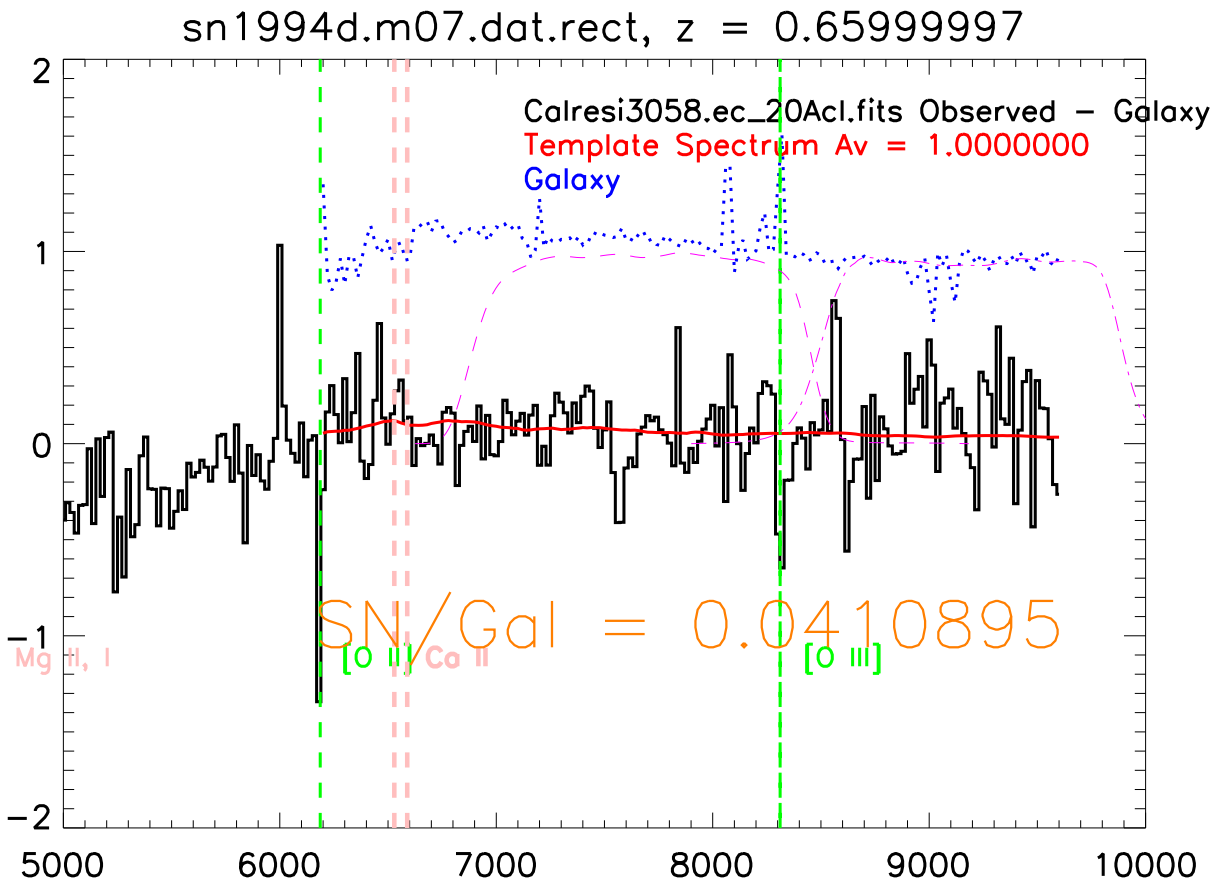

sn1994d.m08.dat.rect, z = 0.61000001
Calresi3058.ec_20Acl.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = 0.0805780
[O II]
Ca II
[O III]
2.0
1.5
1.0
0.5
0.0
−0.5
−1.0
5000
6000
7000
8000
9000
10000

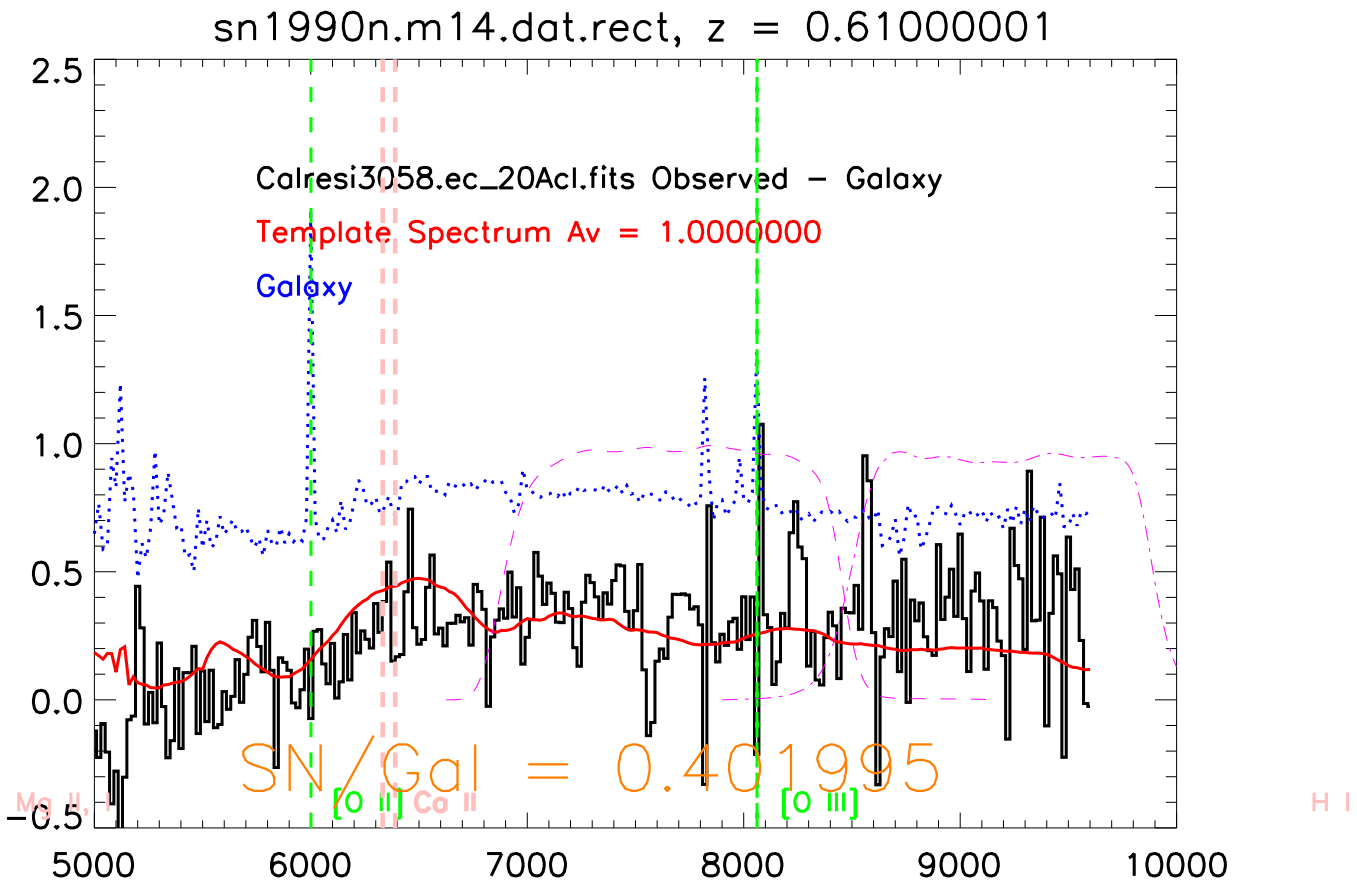

sn1991t.m00.dat.rect, z = 0.78999996
Calresi3058.ec_20Acl.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = 1.06846
Mg II, I
[O II]
Ca II
[O III]
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000
10000

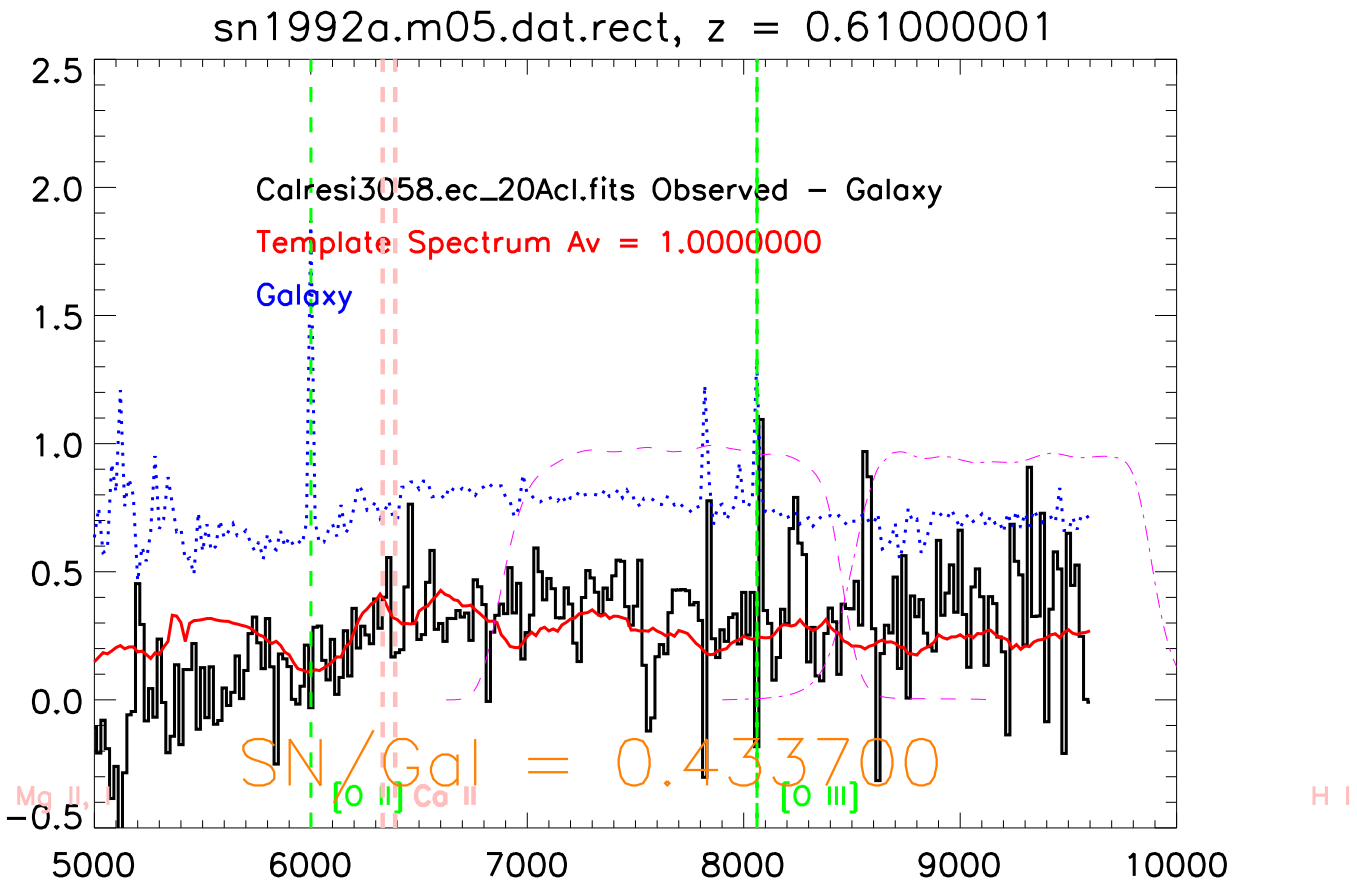

sn1991t.m08.dat.rect, z = 0.78999996
Calresi3058.ec_20Acl.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = 1.23550
Mg II, I
[O II]
Ca II
[O III]
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000
10000


sn1989b.m07.dat.rect, z = 0.61000001
Calresi3058.ec_20Acl.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = 0.709827
[O II]
Ca II
[O III]
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000
10000


sn1991t.m03.dat.rect, z = 0.75999999
Calresi3058.ec_20Acl.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = 1.19527
Mg II, I
[O II]
Ca II
[O III]
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000
10000


sn1994d.m07.dat.rect, z = 0.65999997
Calresi3058.ec_20Acl.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = 0.0410895
Mg II, I
[O II]
Ca II
[O III]
2
1
0
−1
−2
5000
6000
7000
8000
9000
10000


sn1990n.m14.dat.rect, z = 0.61000001
Calresi3058.ec_20Acl.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = 0.401995
[O II]
Ca II
[O III]
H I
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000
10000


sn1992a.m05.dat.rect, z = 0.61000001
Calresi3058.ec_20Acl.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = 0.433700
[O II] Ca II
[O III]
H I
2.5
2.0
1.5
1.0
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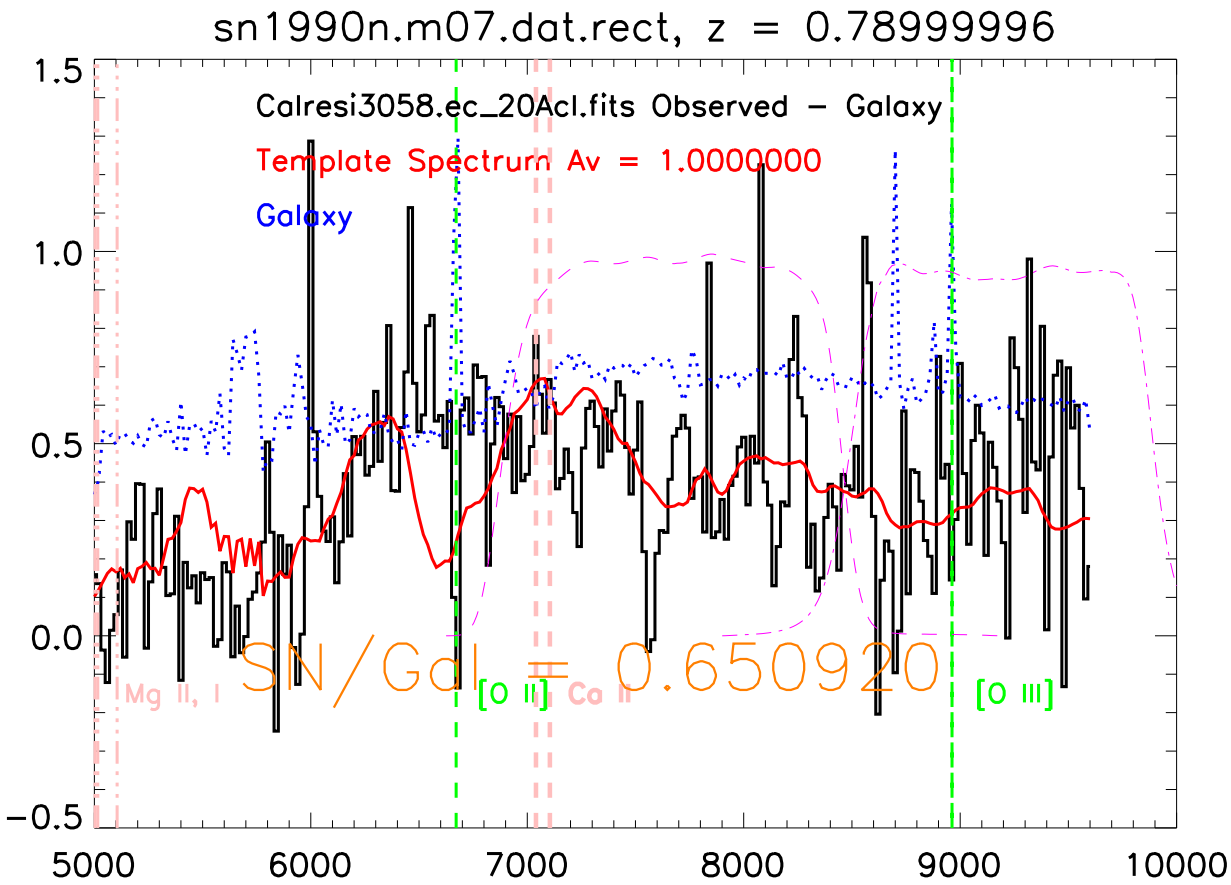
−0.5
5000
6000
7000
8000
9000
10000


sn1990n.m07.dat.rect, z = 0.78999996
Calresi3058.ec_20Acl.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = 0.650920
Mg II, I
[O II]
Ca II
[O III]
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000
10000