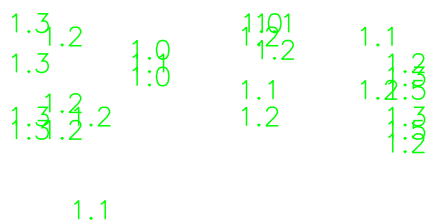
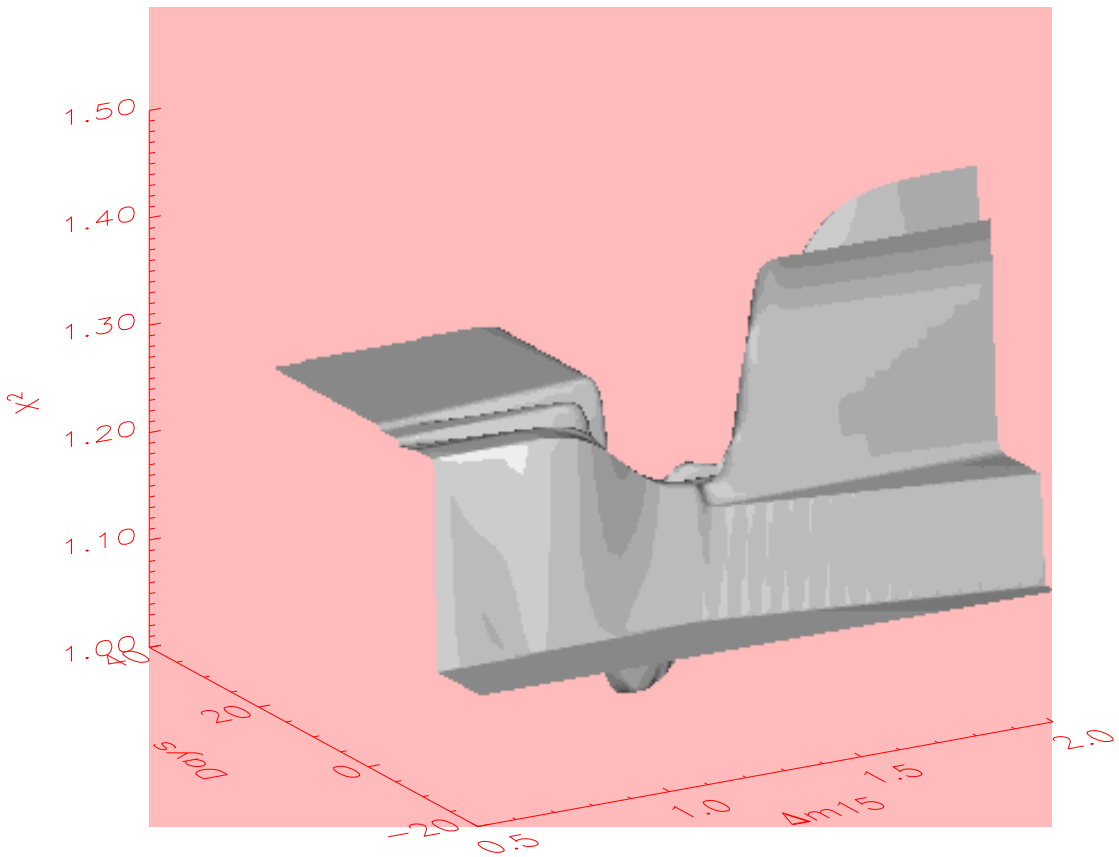
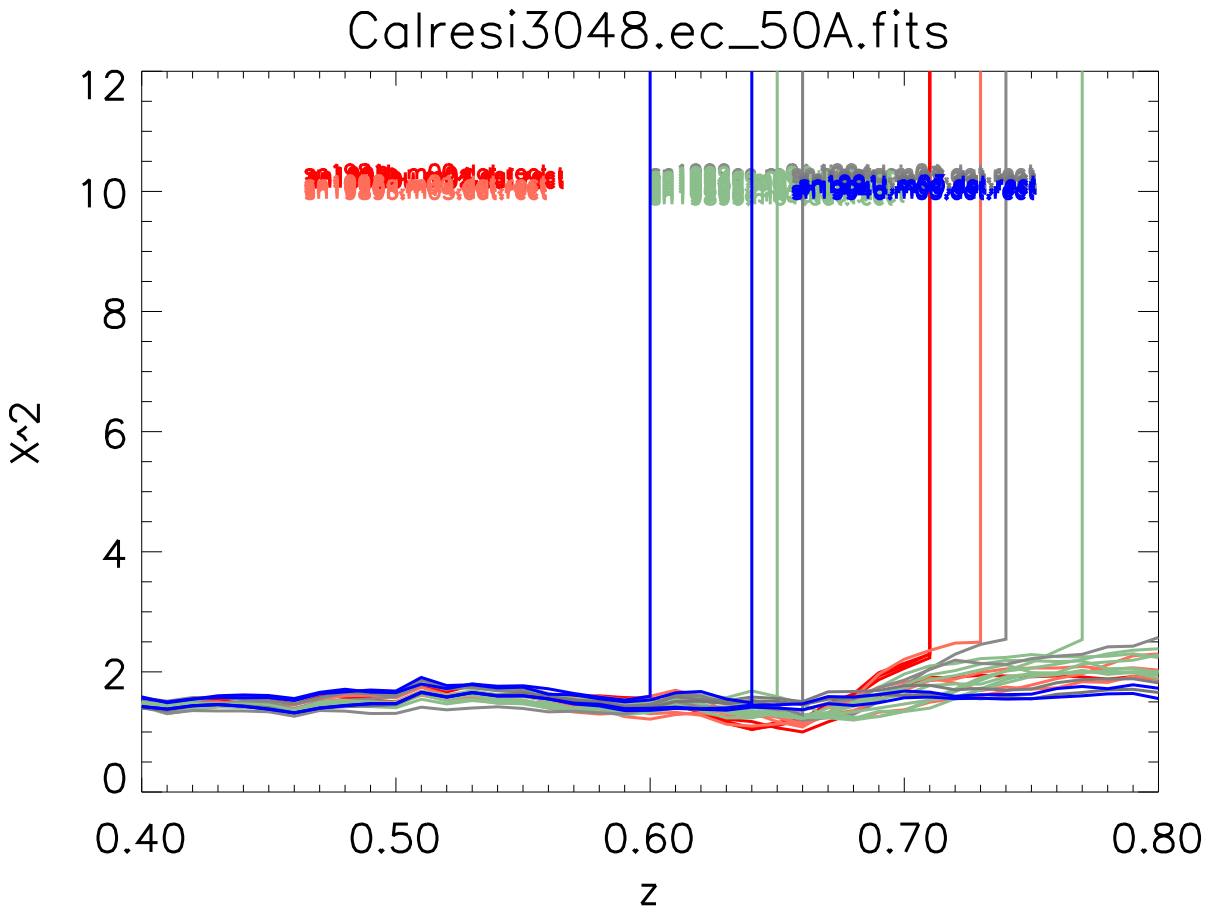
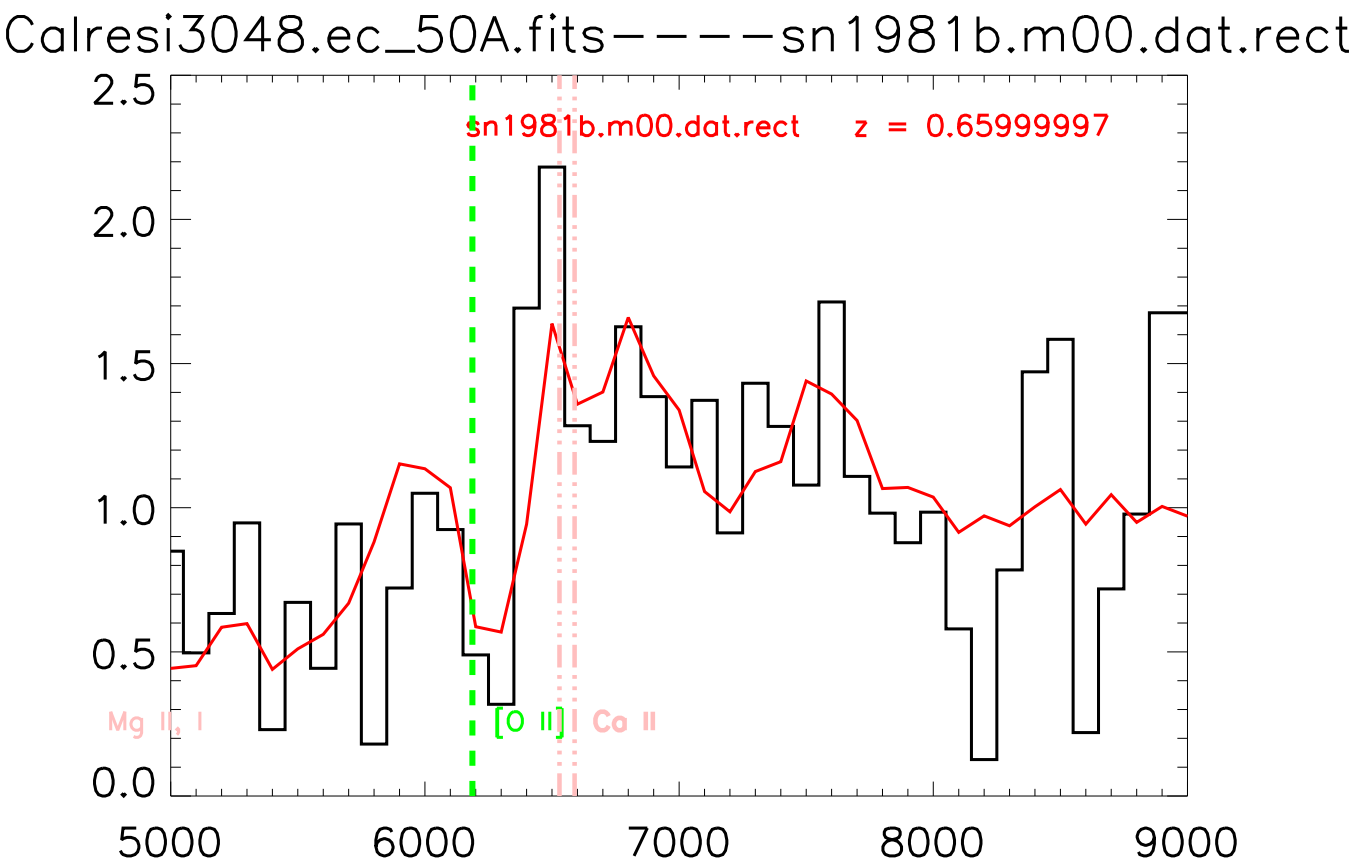
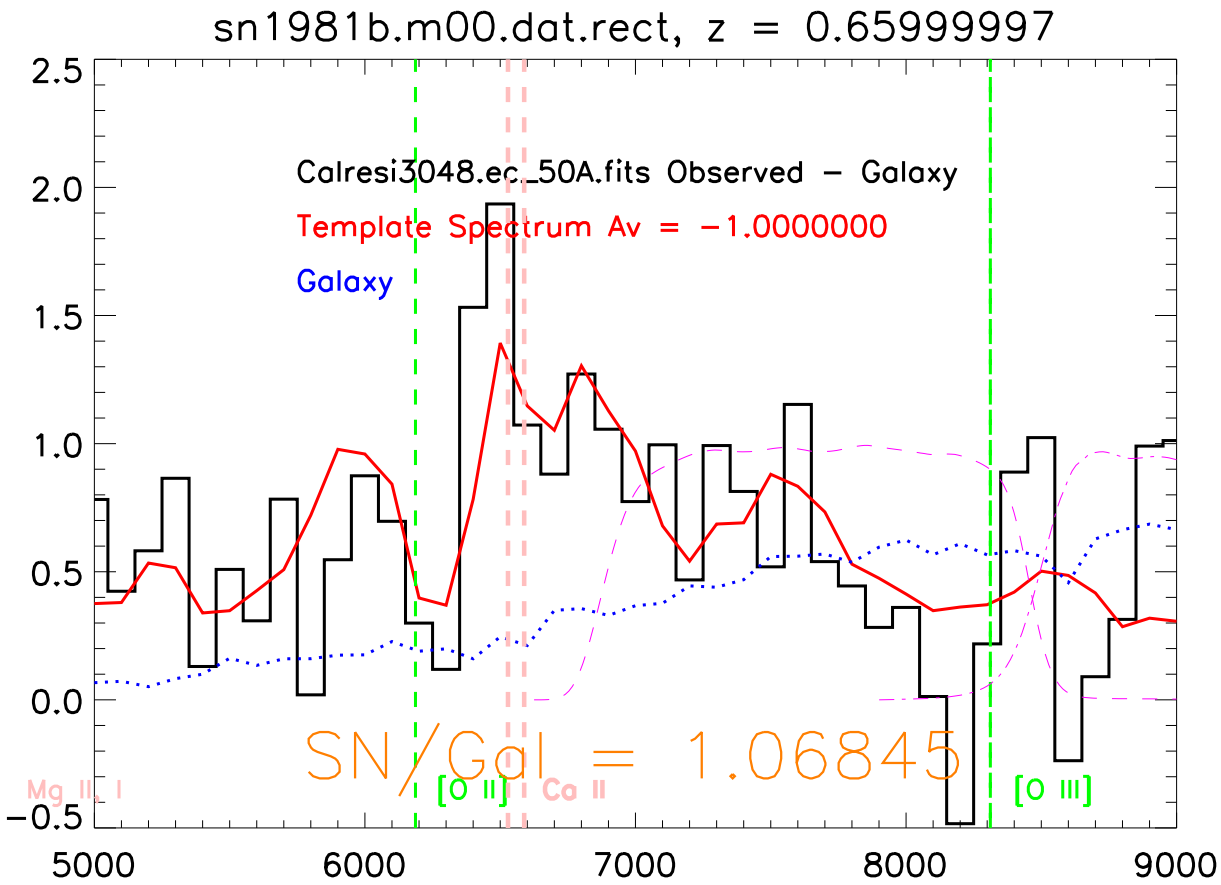

1.3
1.2
1.3
1.0
1.0
1.2
1.3
1.2
1.3
1.2
1.1
1.2
1.1
1.2
1.2
1.1

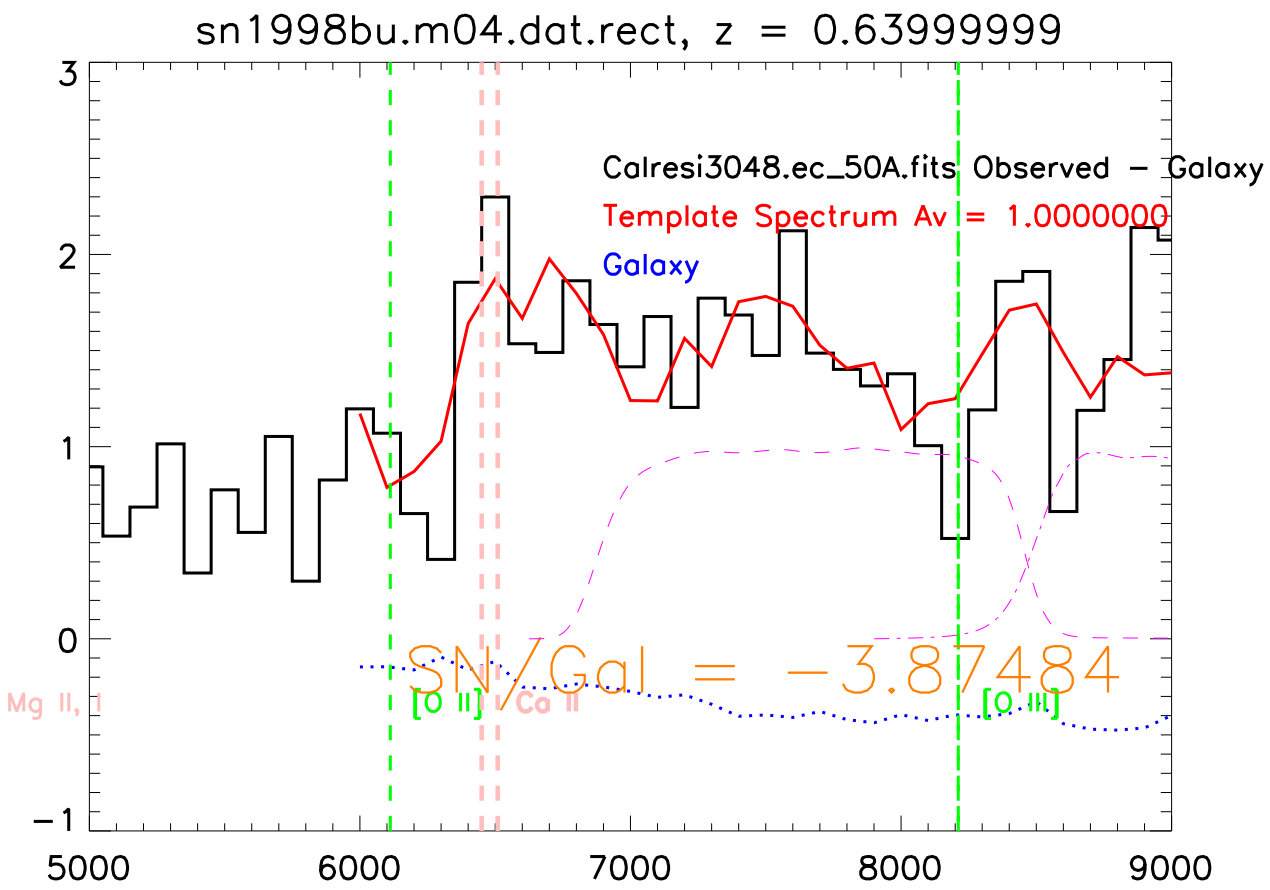


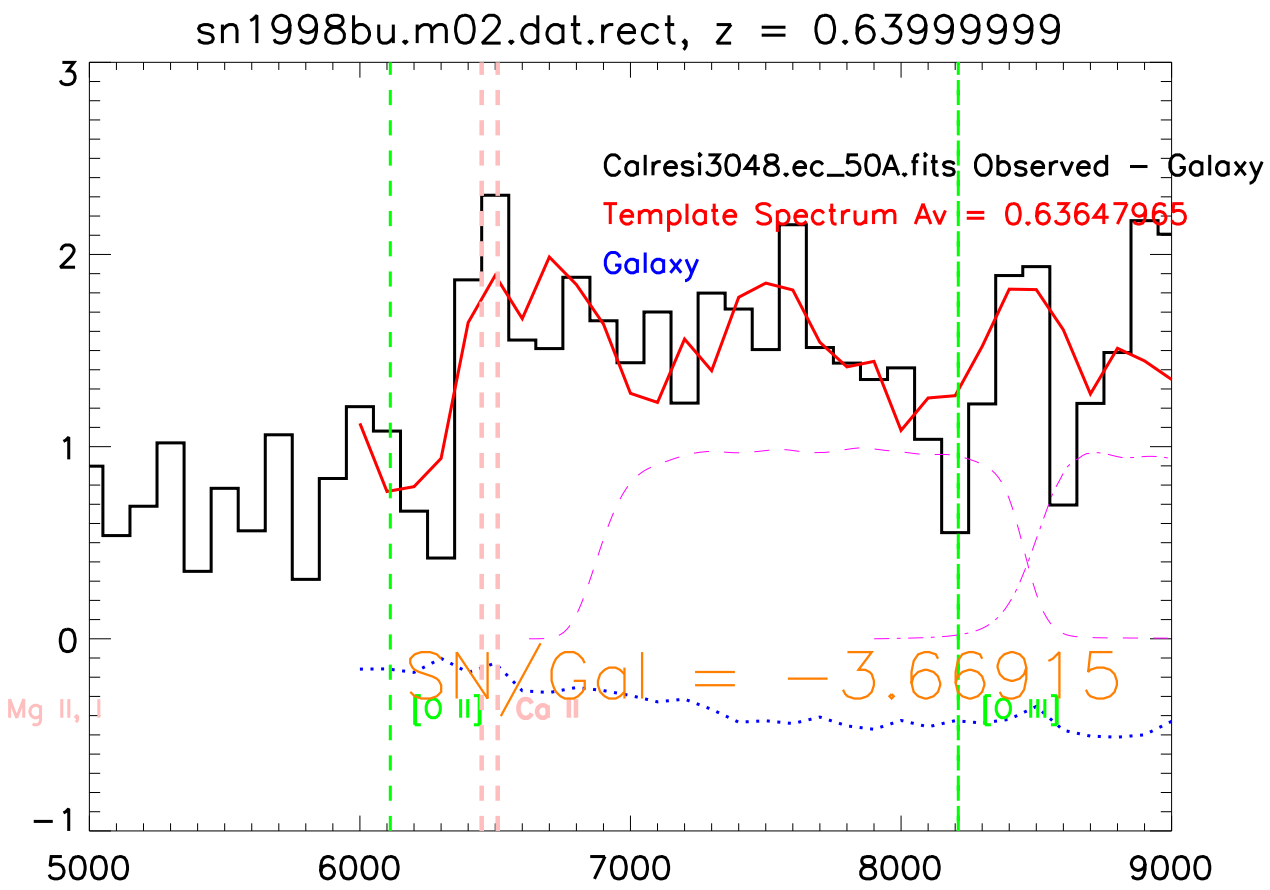
1.50
1.40
1.30
1.20
1.10
1.00
χ^2
40
20
0
−20
Days
0.5
1.0
1.5
2.0
Δm15

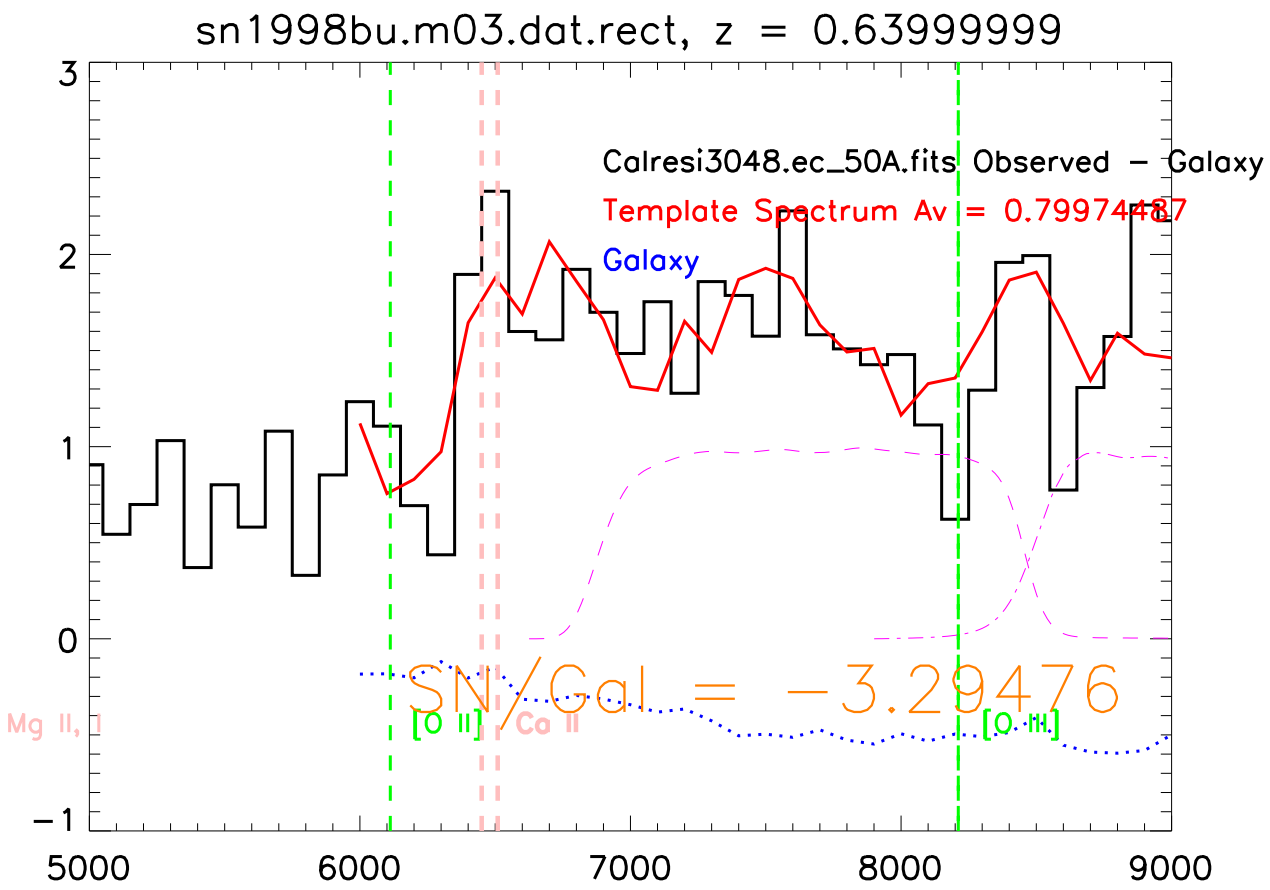

Calresi3048.ec_50A.fits
12
10
8
6
4
2
0
X^2
0.40
0.50
0.60
0.70
0.80
z

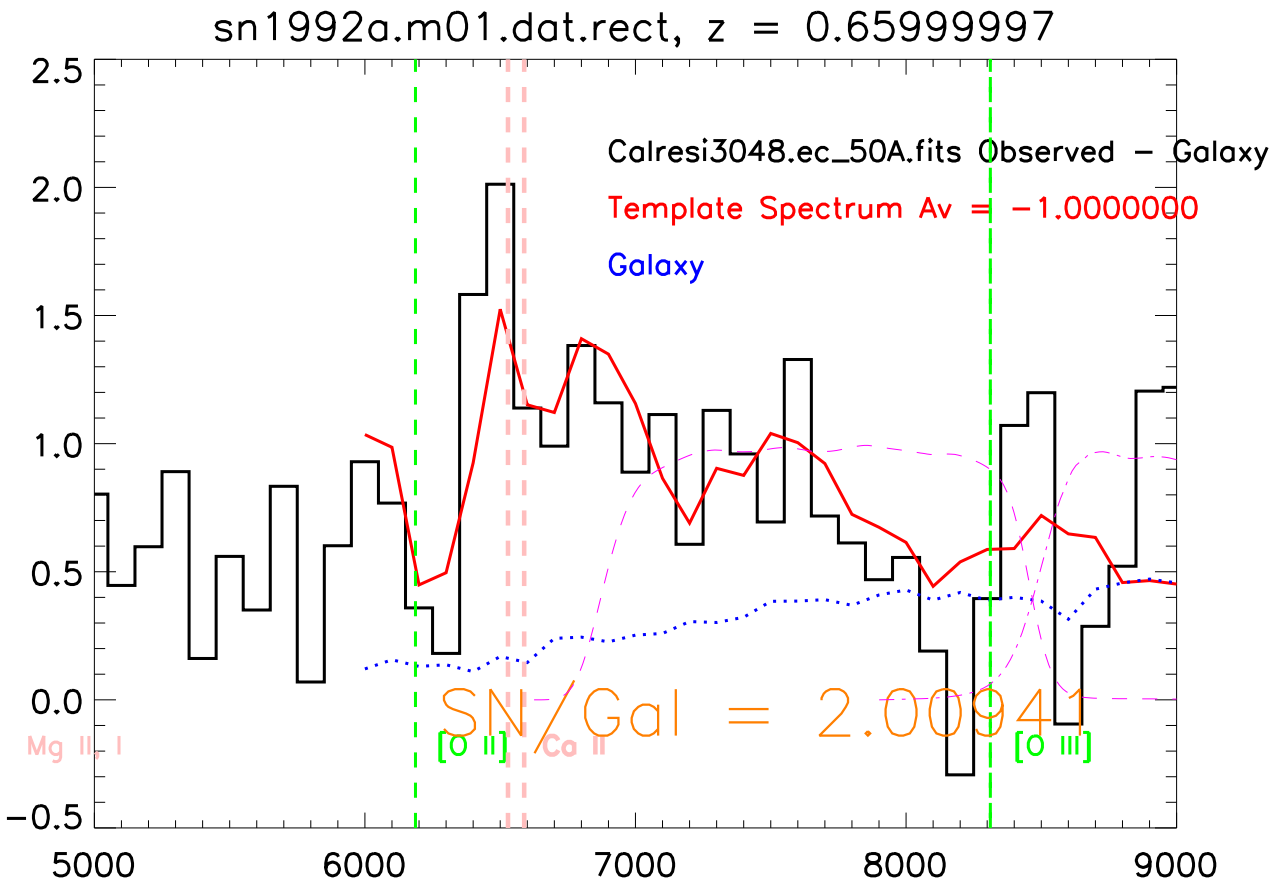

Calresi3048.ec_50A.fits----sn1981b.m00.dat.rect
sn1981b.m00.dat.rect z = 0.65999997
Mg II, I
[O II]
Ca II
2.5
2.0
1.5
1.0
0.5
0.0
5000
6000
7000
8000
9000

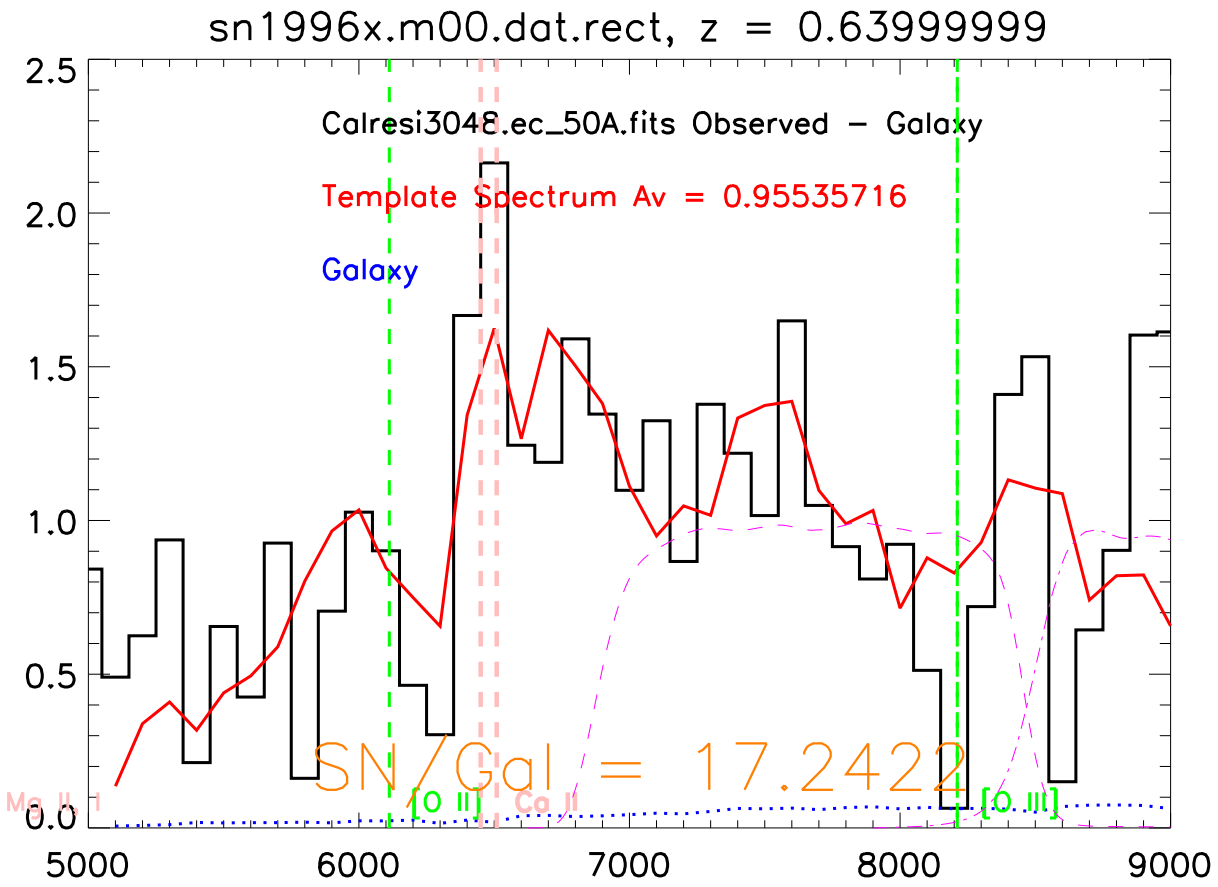

sn1981b.m00.dat.rect, z = 0.65999997
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = −1.0000000
Galaxy
SN/Gal = 1.06845
Mg II
[O II]
Ca II
[O III]
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000

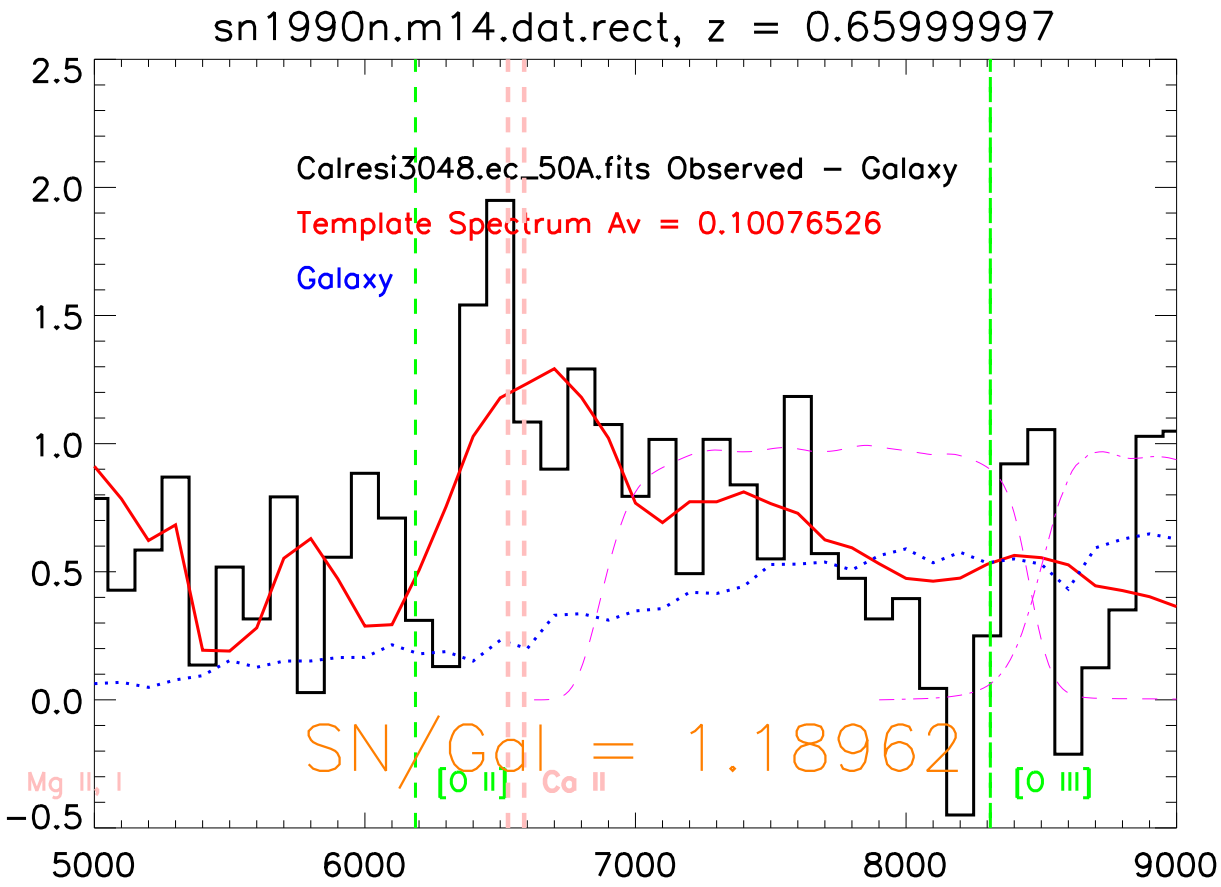

sn1998bu.m04.dat.rect, z = 0.63999999
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = −3.87484
Mg II,
[O II]
Ca II
[O III]
3
2
1
0
−1
5000
6000
7000
8000
9000

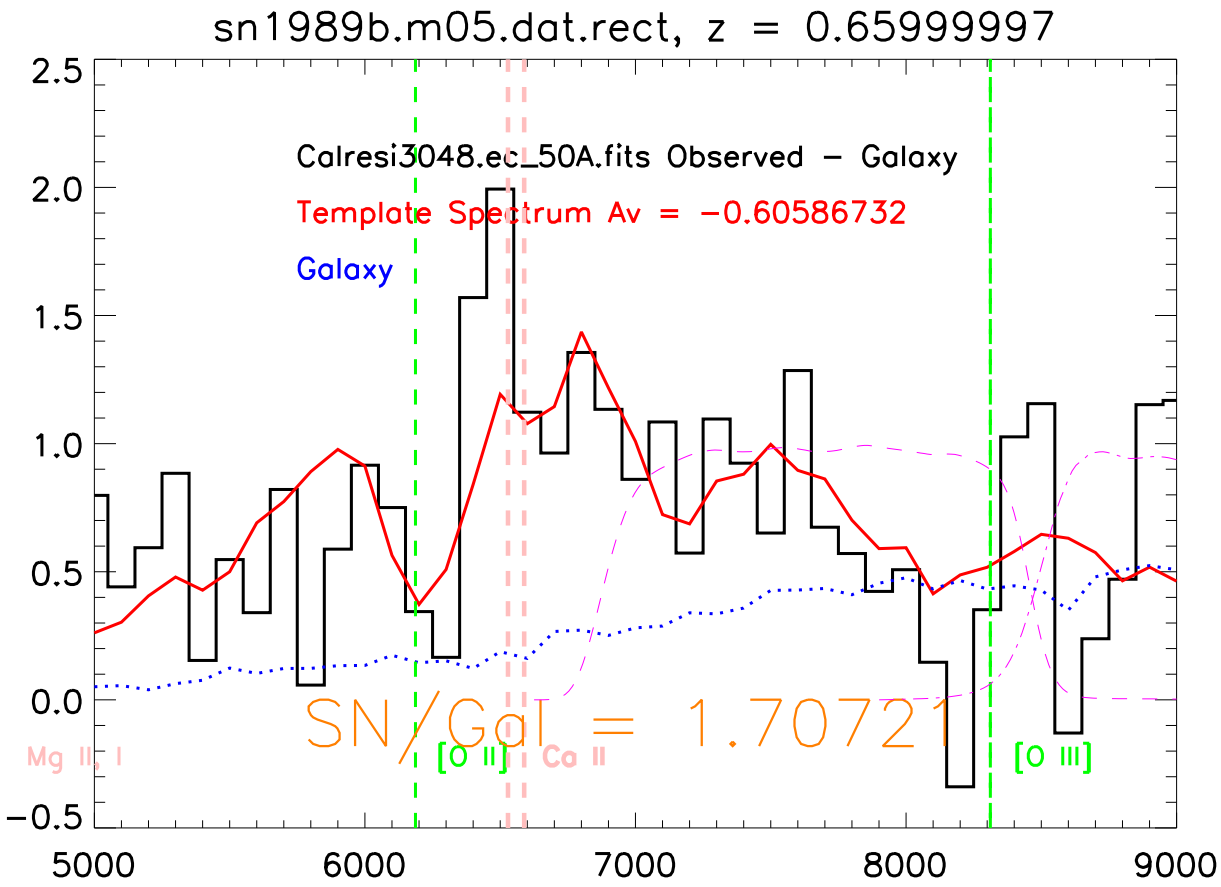

sn1998bu.m02.dat.rect, z = 0.63999999
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = 0.63647965
Galaxy
SN/Gal = −3.66915
Mg II,
[O II]
Ca II
[O III]
3
2
1
0
−1
5000
6000
7000
8000
9000

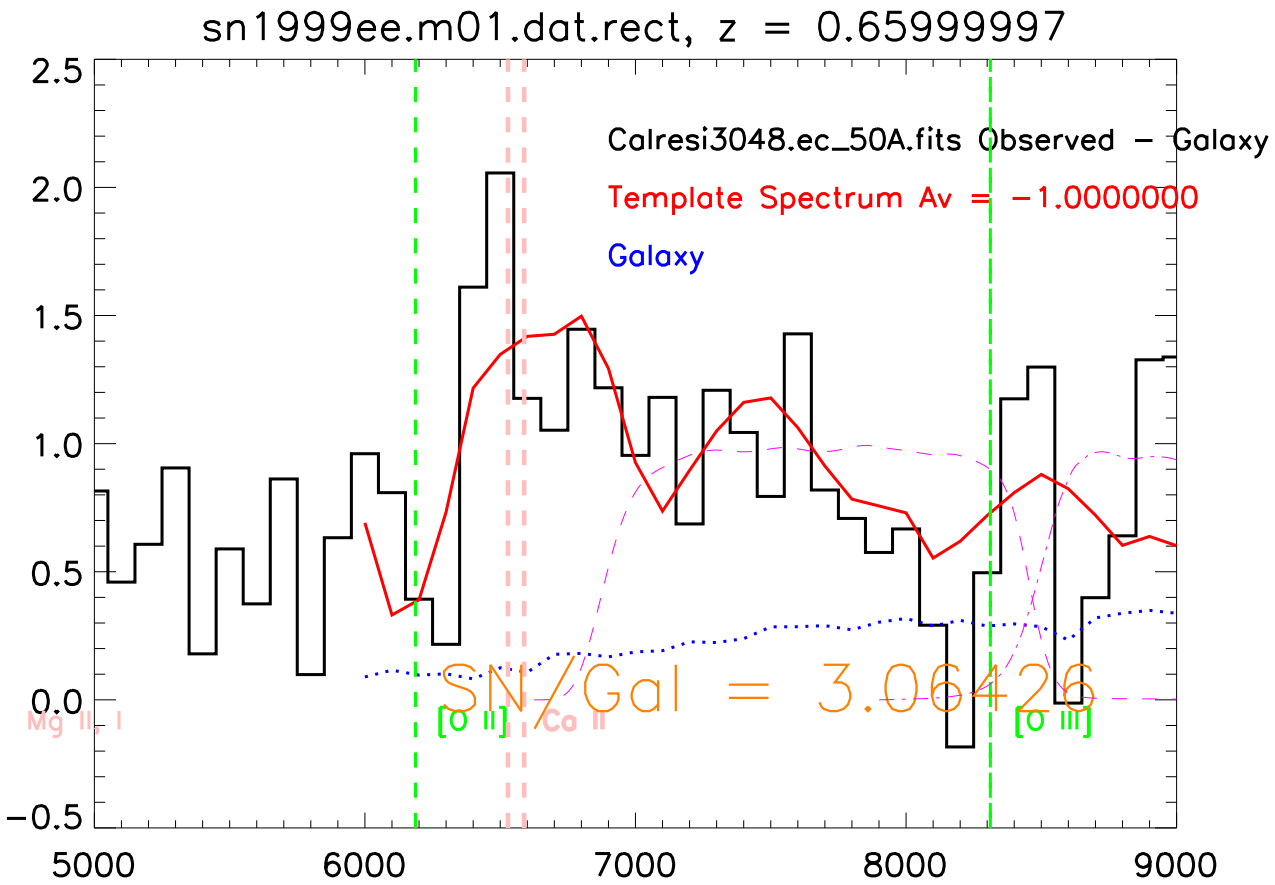

sn1998bu.m03.dat.rect, z = 0.63999999
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = 0.79974487
Galaxy
SN/Gal = −3.29476
Mg II, 1
[O II]
Ca II
[O III]
3
2
1
0
−1
5000
6000
7000
8000
9000

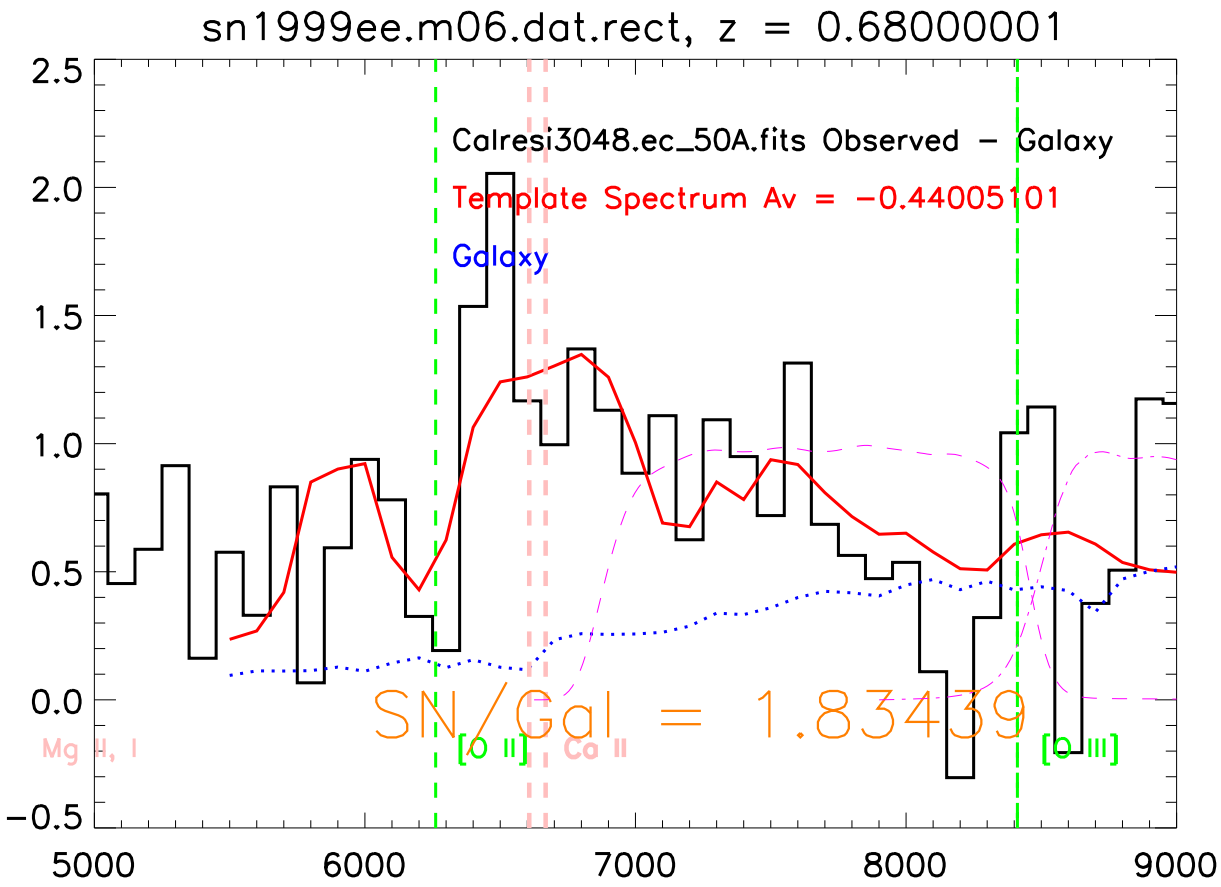

sn1992a.m01.dat.rect, z = 0.65999997
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = −1.0000000
Galaxy
SN/Gal = 2.00941
Mg II, I
[O II]
Ca II
[O III]
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000

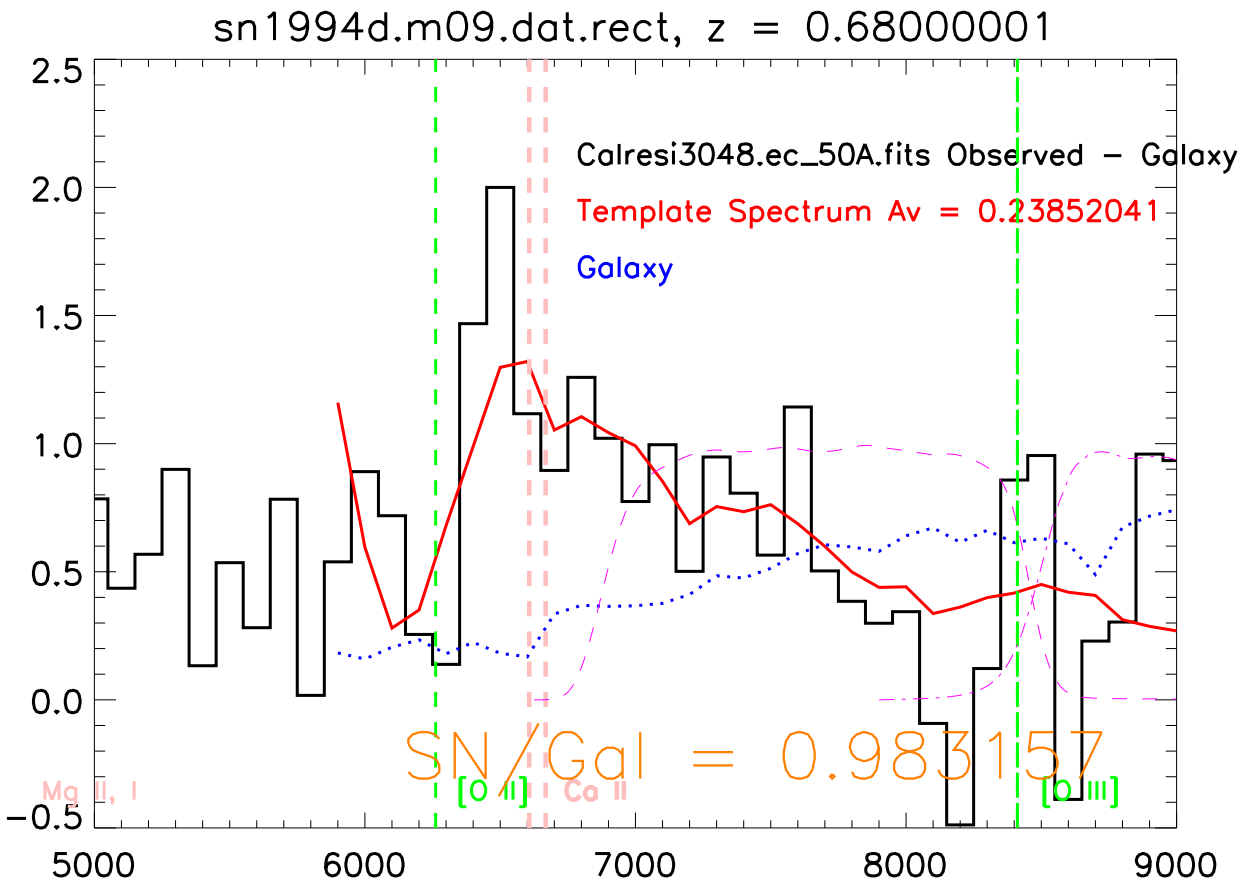

sn1996x.m00.dat.rect, z = 0.63999999
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = 0.95535716
Galaxy
SN/Gal = 17.2422
[O II]
Ca II
[O III]
2.5
2.0
1.5
1.0
0.5
0.0
5000
6000
7000
8000
9000

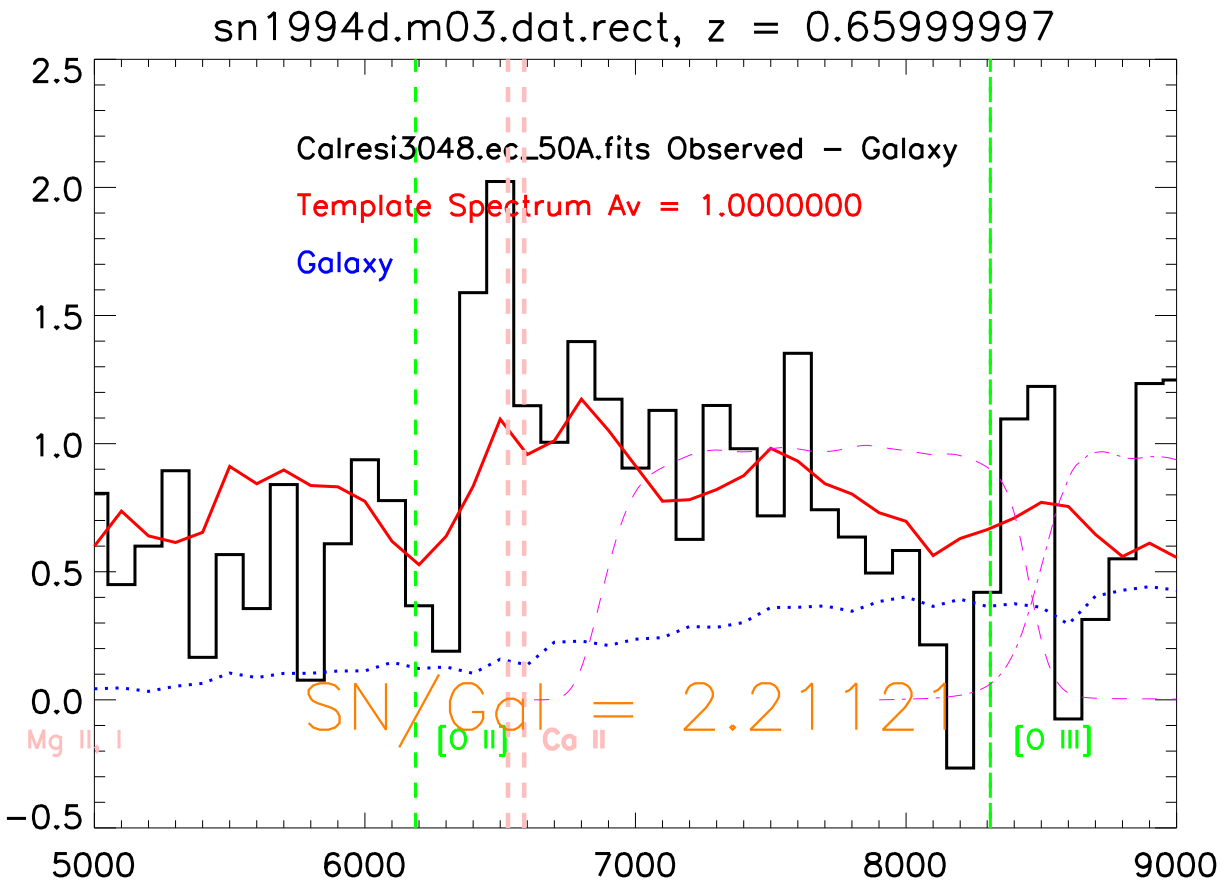

sn1990n.m14.dat.rect, z = 0.65999997
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = 0.10076526
Galaxy
SN/Gal = 1.18962
Mg II, I
[O II]
Ca II
[O III]
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000

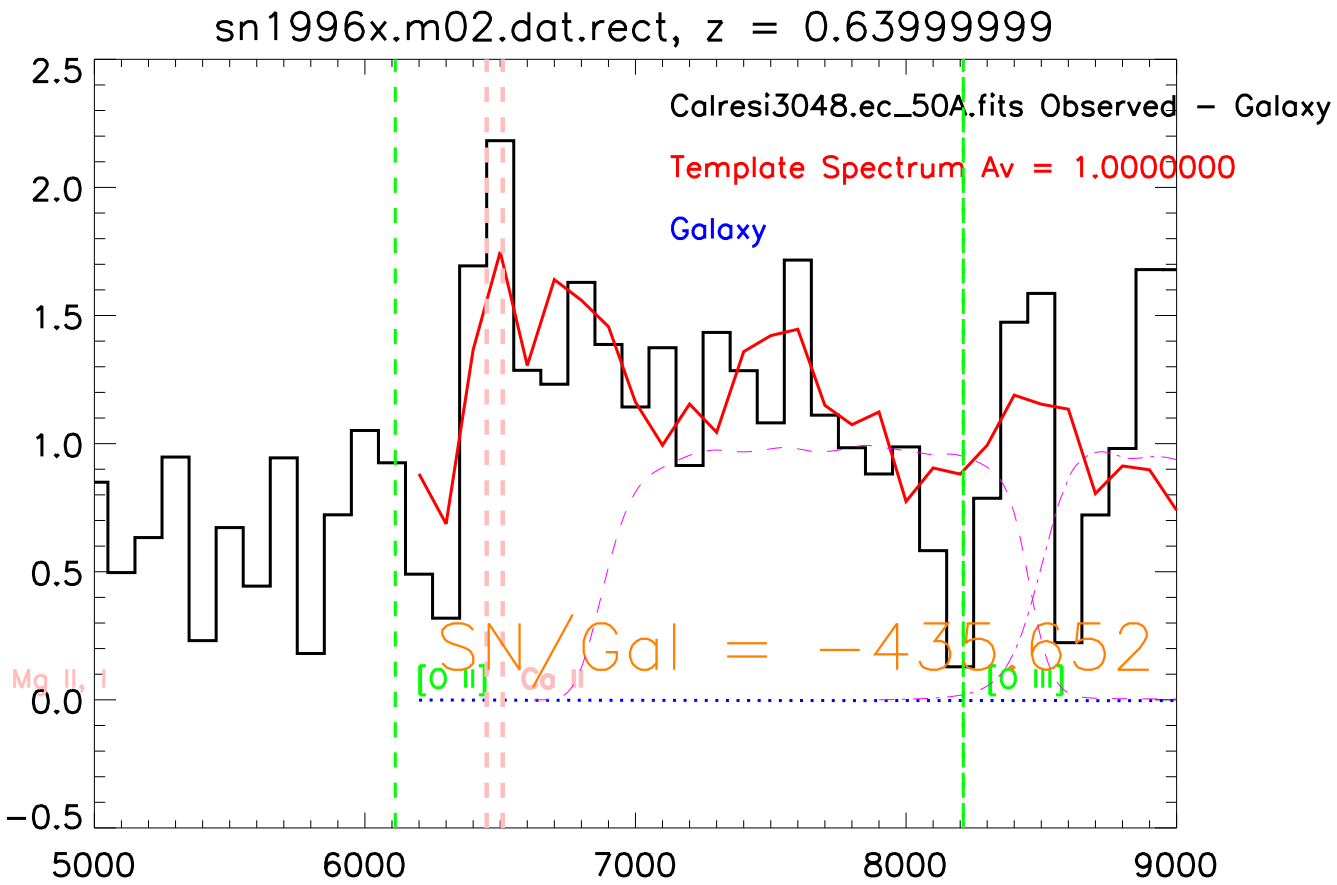

sn1989b.m05.dat.rect, z = 0.65999997
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = −0.60586732
Galaxy
SN/Gal = 1.70721
Mg II, I
[O II]
Ca II
[O III]
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000

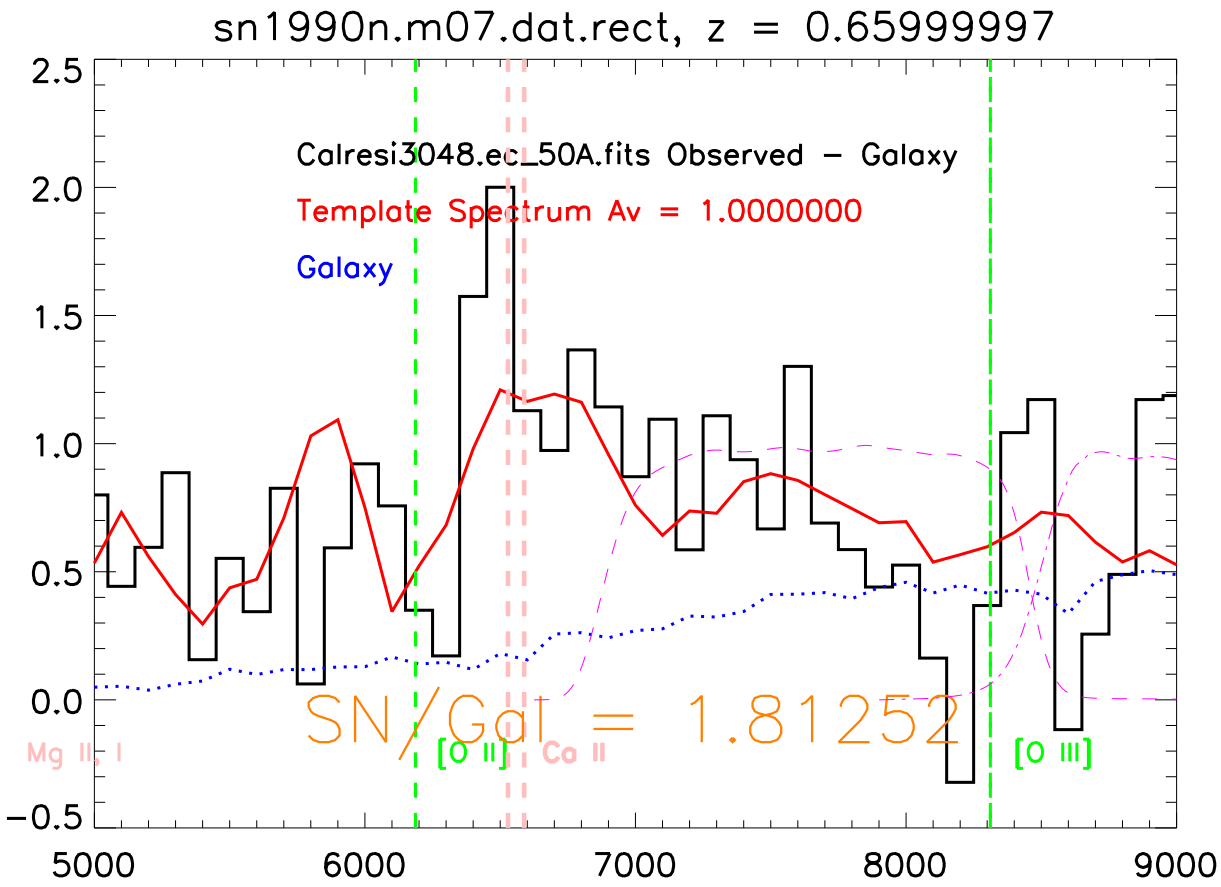

sn1999ee.m01.dat.rect, z = 0.65999997
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = −1.0000000
Galaxy
SN/Gal = 3.06426
Mg II, I
[O II]
Ca II
[O III]
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000

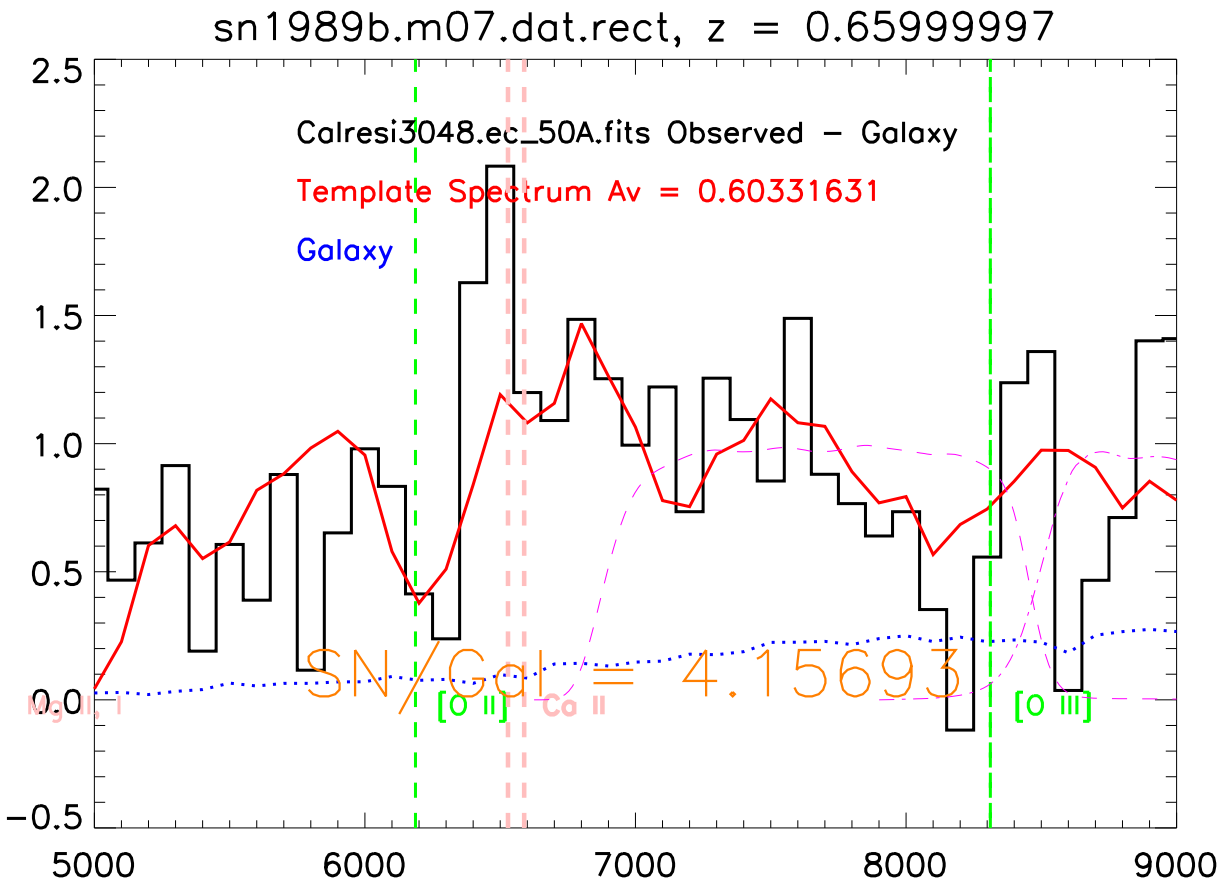

sn1999ee.m06.dat.rect, z = 0.68000001
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = −0.44005101
Galaxy
SN/Gal = 1.83439
Mg II, I
[O II]
Ca II
[O III]
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000

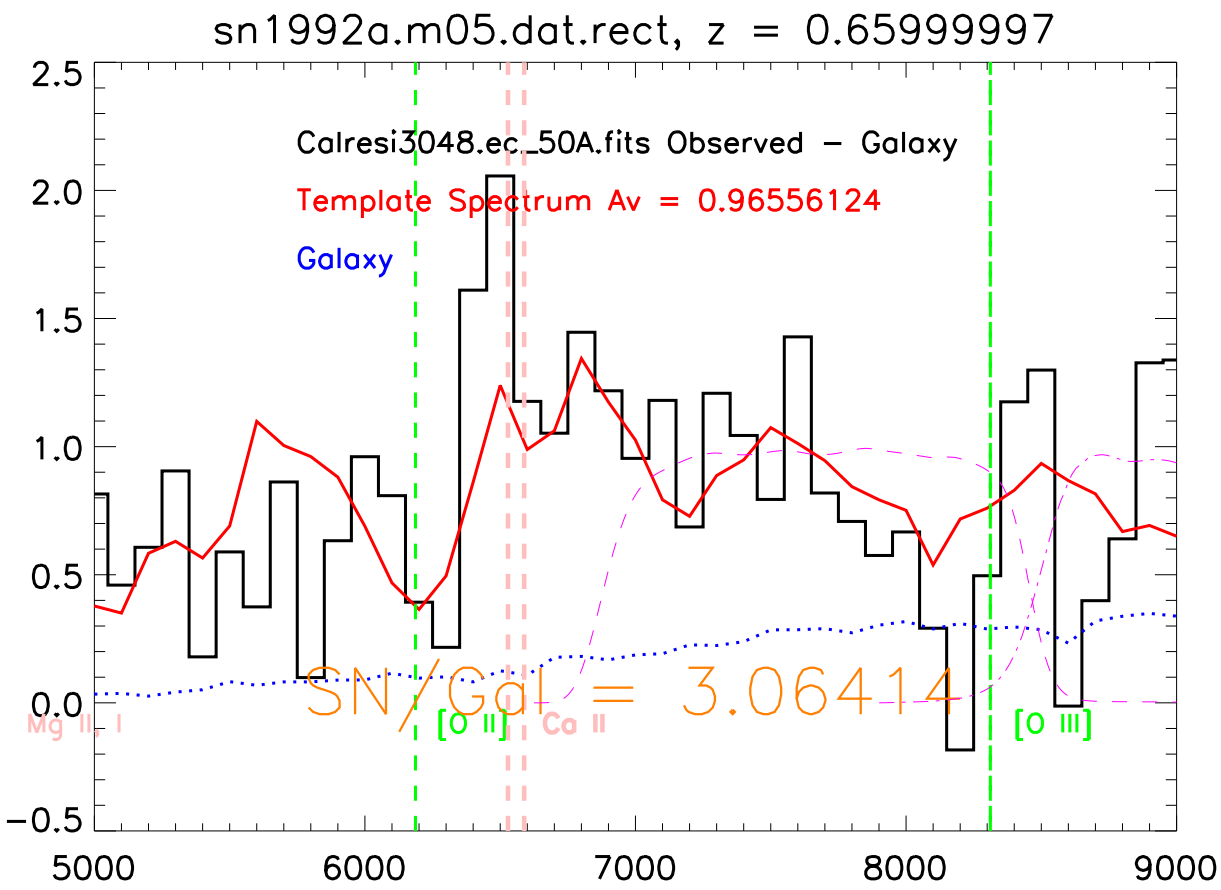

sn1994d.m09.dat.rect, z = 0.68000001
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = 0.23852041
Galaxy
SN/Gal = 0.983157
Mg II, I
[O II]
Ca II
[O III]
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000

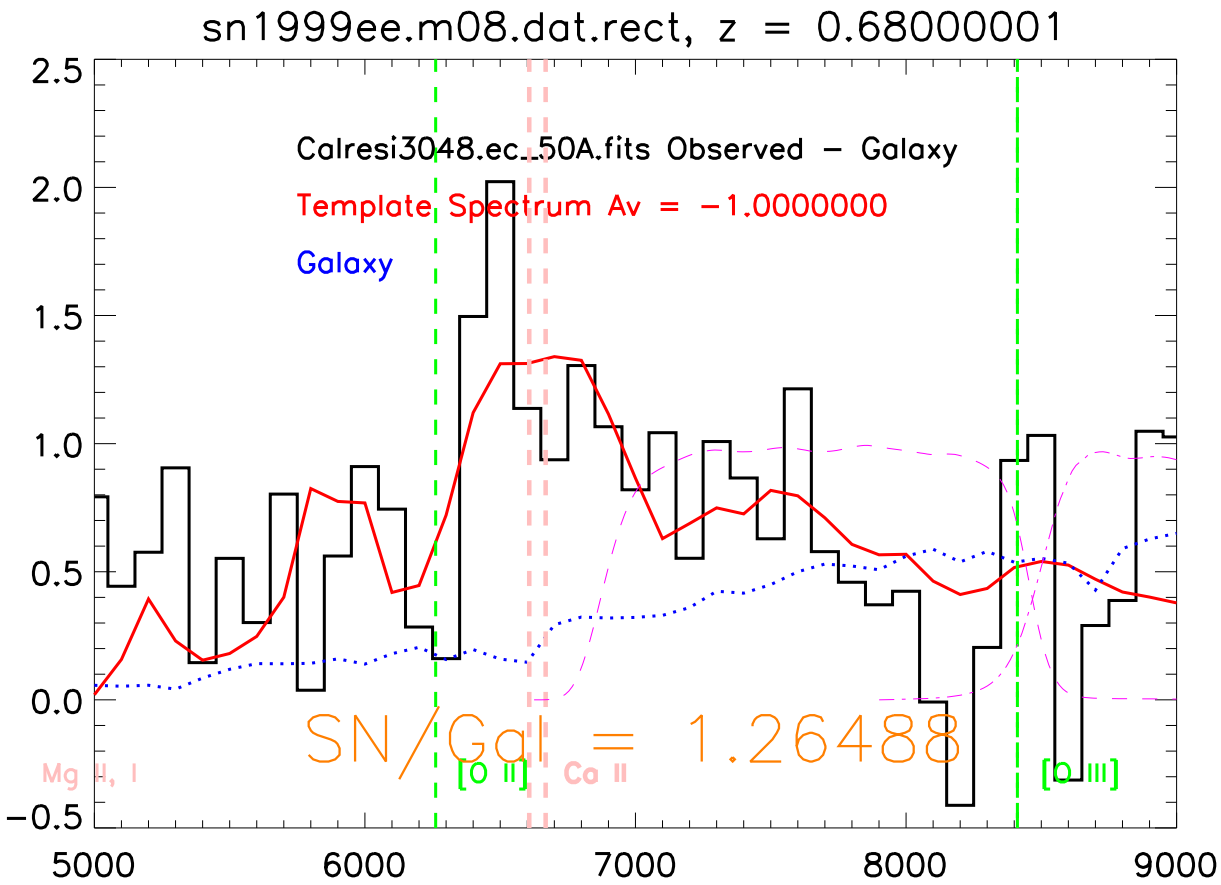

sn1994d.m03.dat.rect, z = 0.65999997
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = 2.21121
Mg II, I
[O II]
Ca II
[O III]
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000

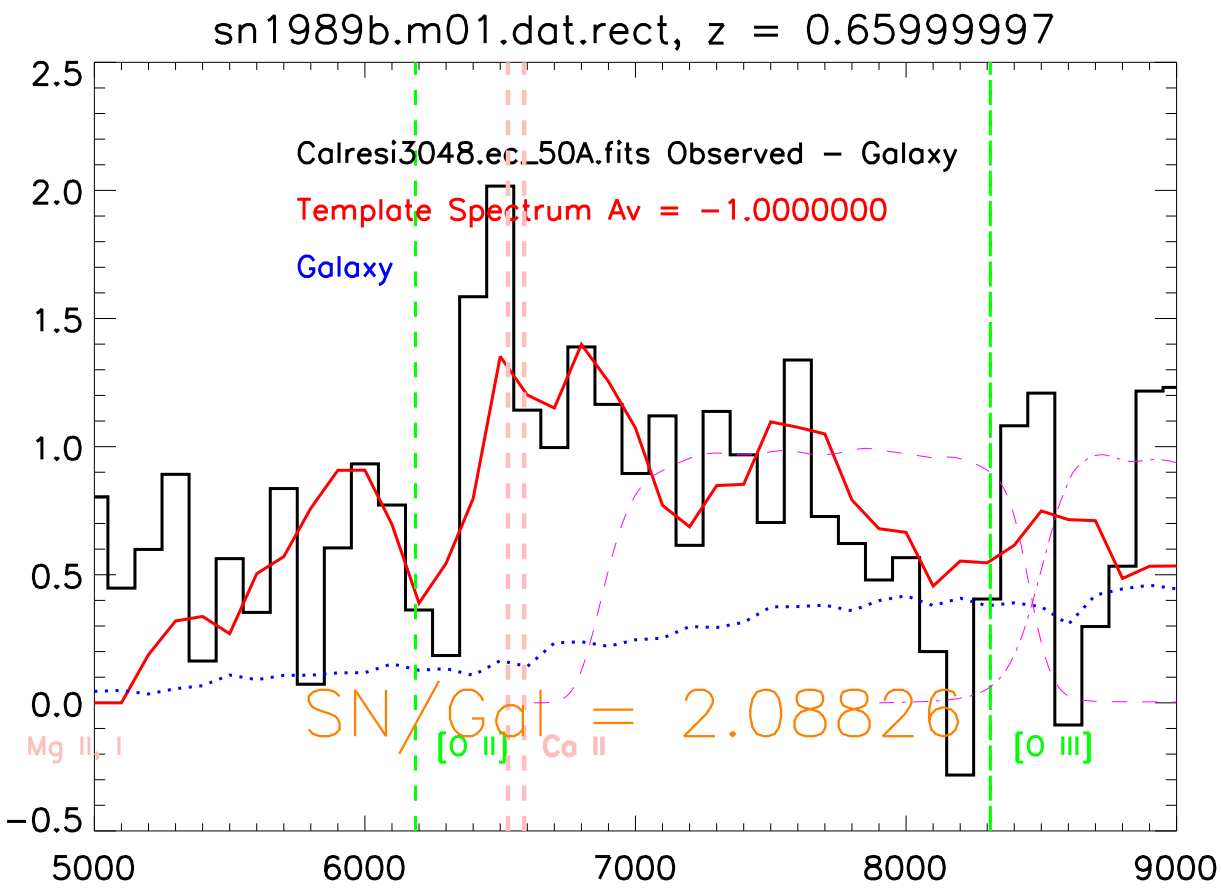

sn1996x.m02.dat.rect, z = 0.63999999
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = −435.652
Mg II
[O II]
Ca II
[O III]
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000

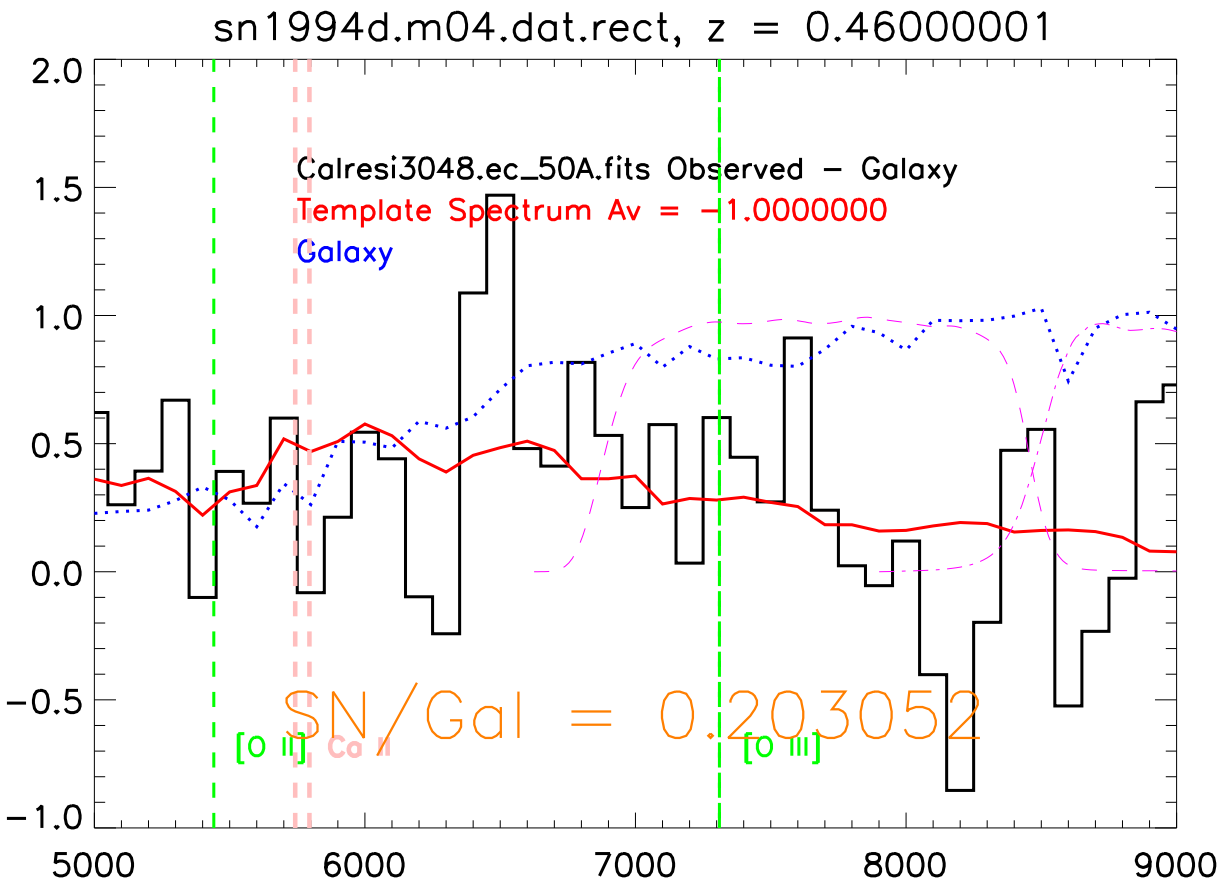

sn1990n.m07.dat.rect, z = 0.65999997
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = 1.81252
Mg II, I
[O II]
Ca II
[O III]
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000

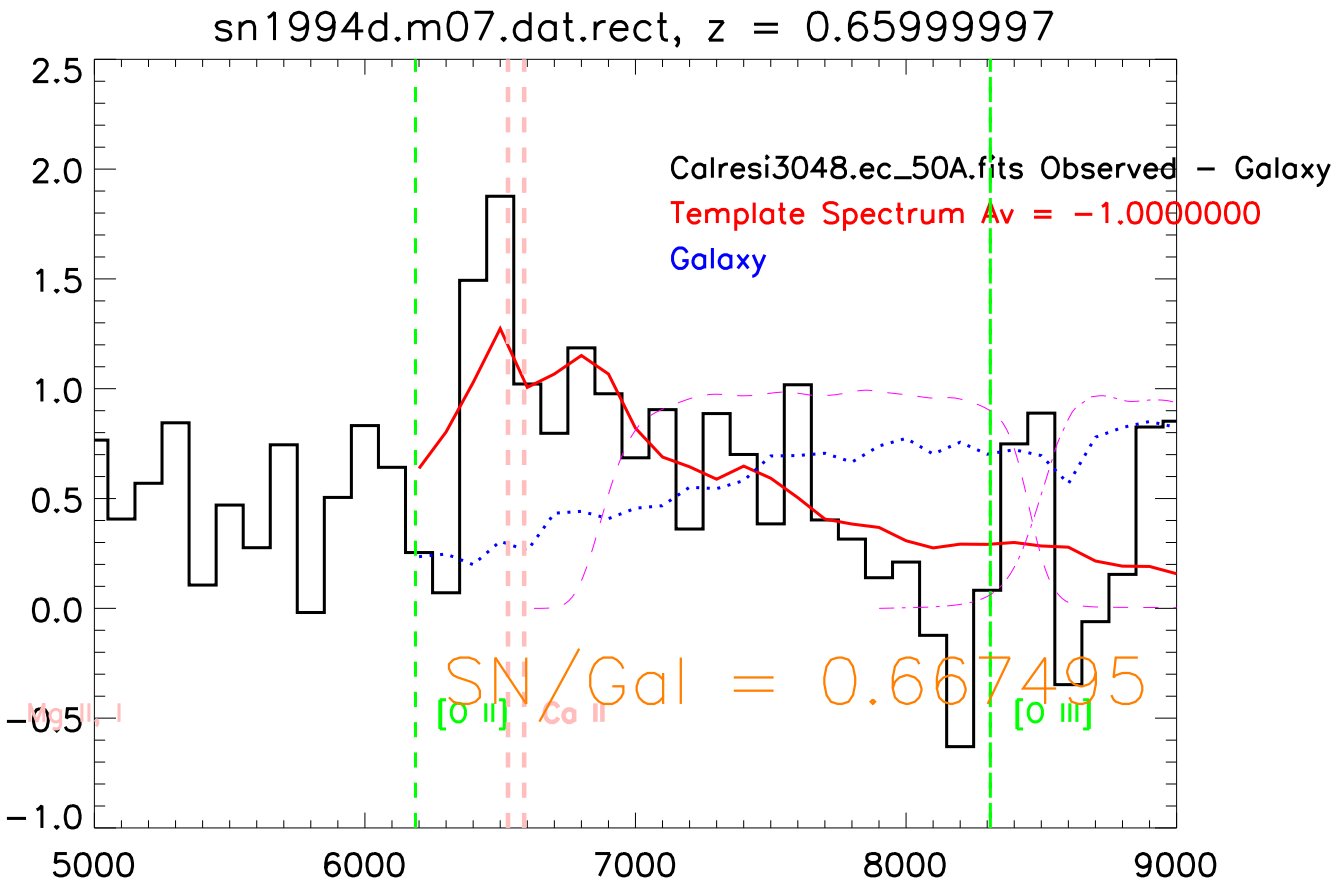

sn1989b.m07.dat.rect, z = 0.65999997
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = 0.60331631
Galaxy
SN/Gal = 4.15693
[O II]
Ca II
[O III]
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000

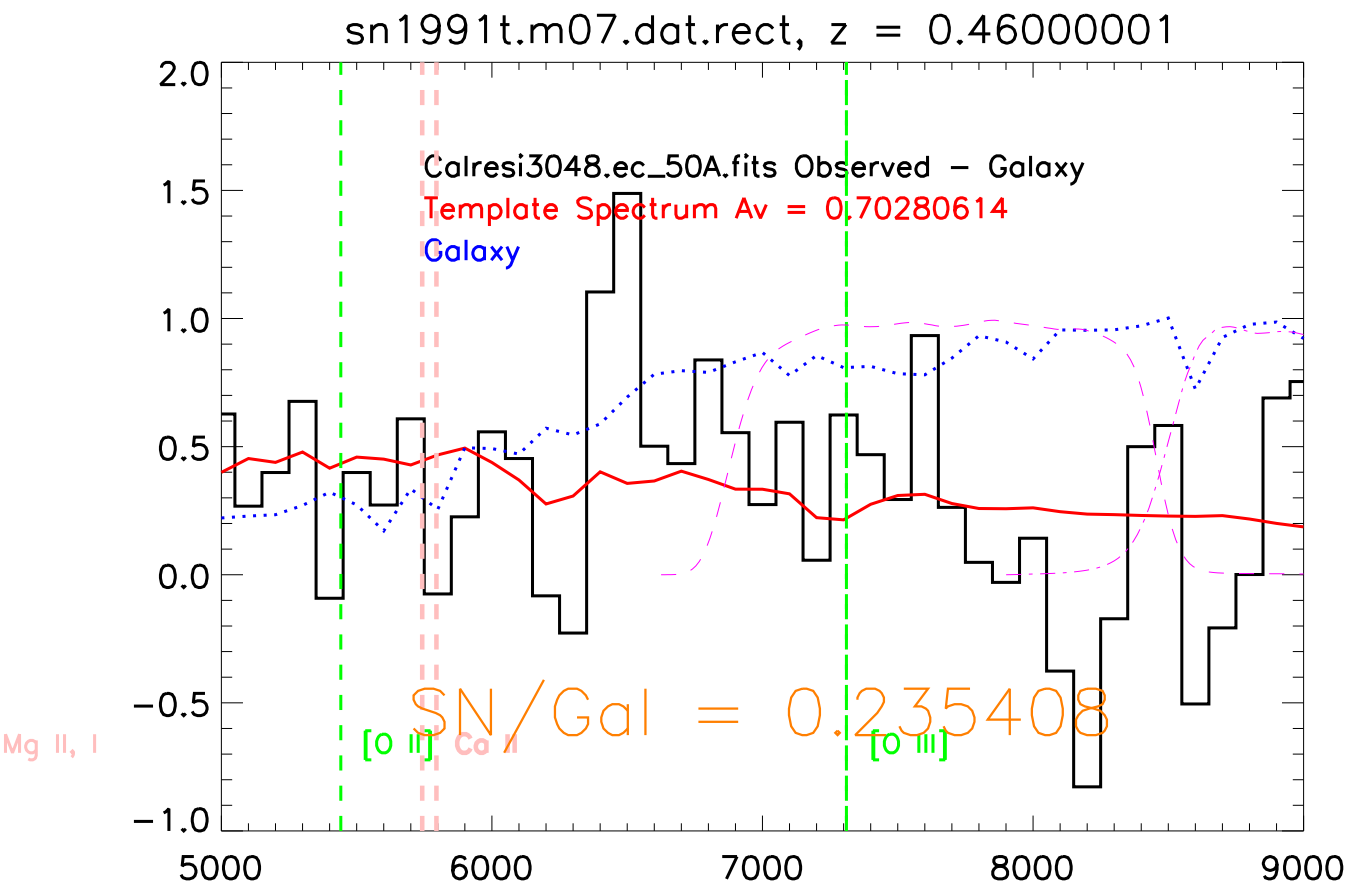

sn1992a.m05.dat.rect, z = 0.65999997
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = 0.96556124
Galaxy
SN/Gal = 3.06414
Mg II
[O II]
Ca II
[O III]
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000

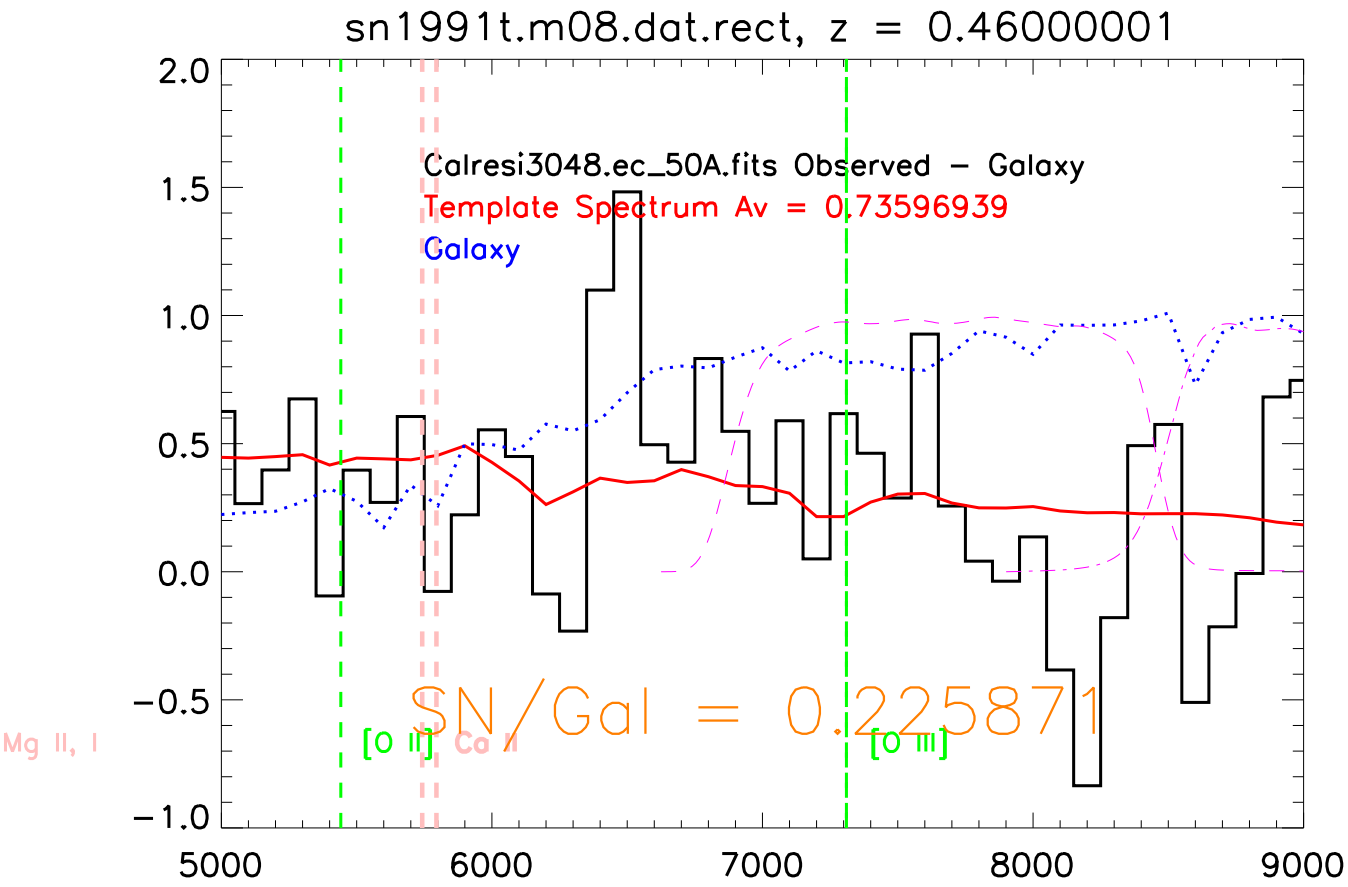

sn1999ee.m08.dat.rect, z = 0.68000001
Calresi3048.ec..50A.fits Observed − Galaxy
Template Spectrum Av = −1.0000000
Galaxy
SN/Gal = 1.26488
Mg II, I
[O II]
Ca II
[O III]
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000

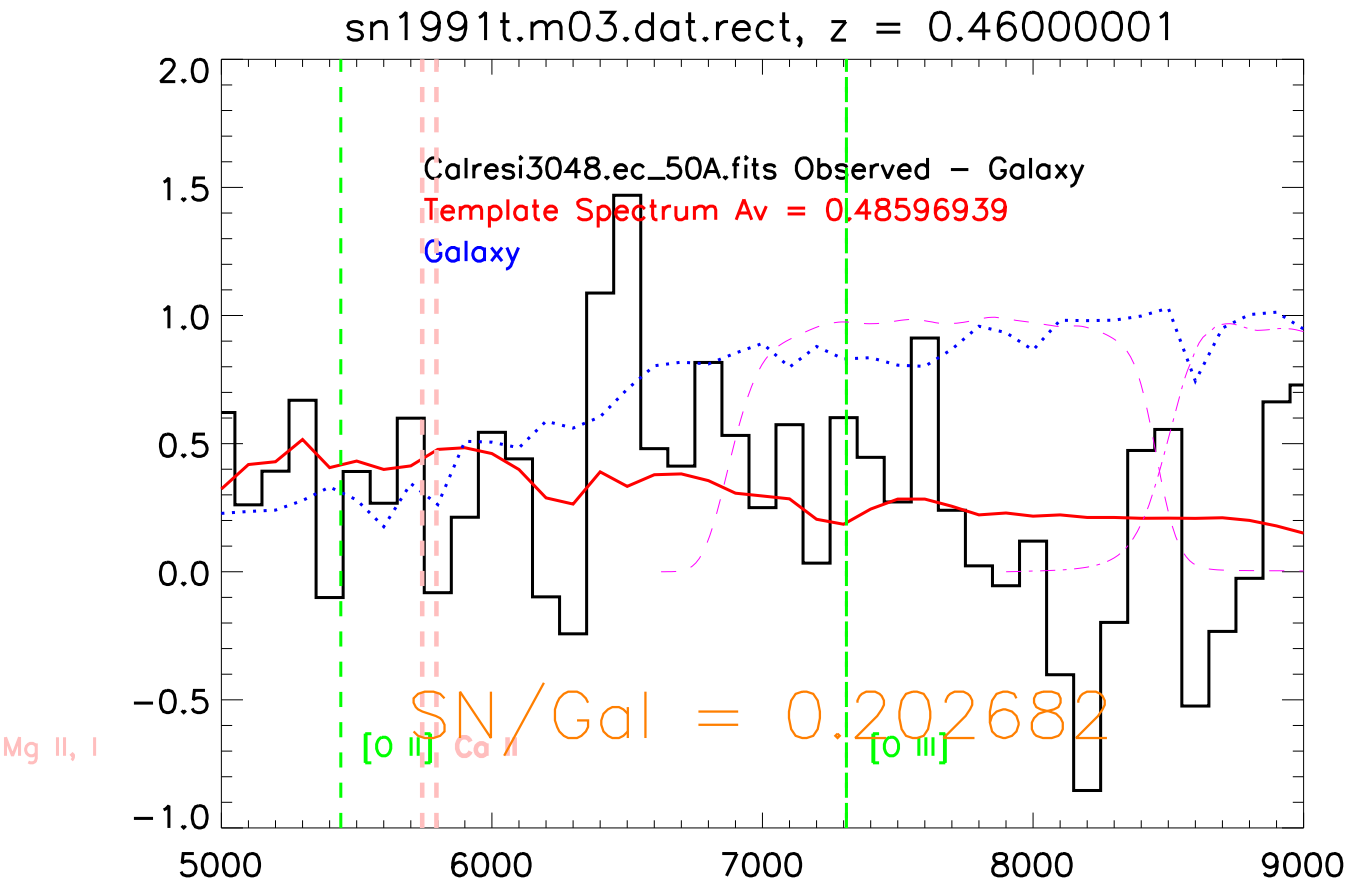

sn1989b.m01.dat.rect, z = 0.65999997
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = −1.0000000
Galaxy
SN/Gal = 2.08826
Mg II, I
[O II]
Ca II
[O III]
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000

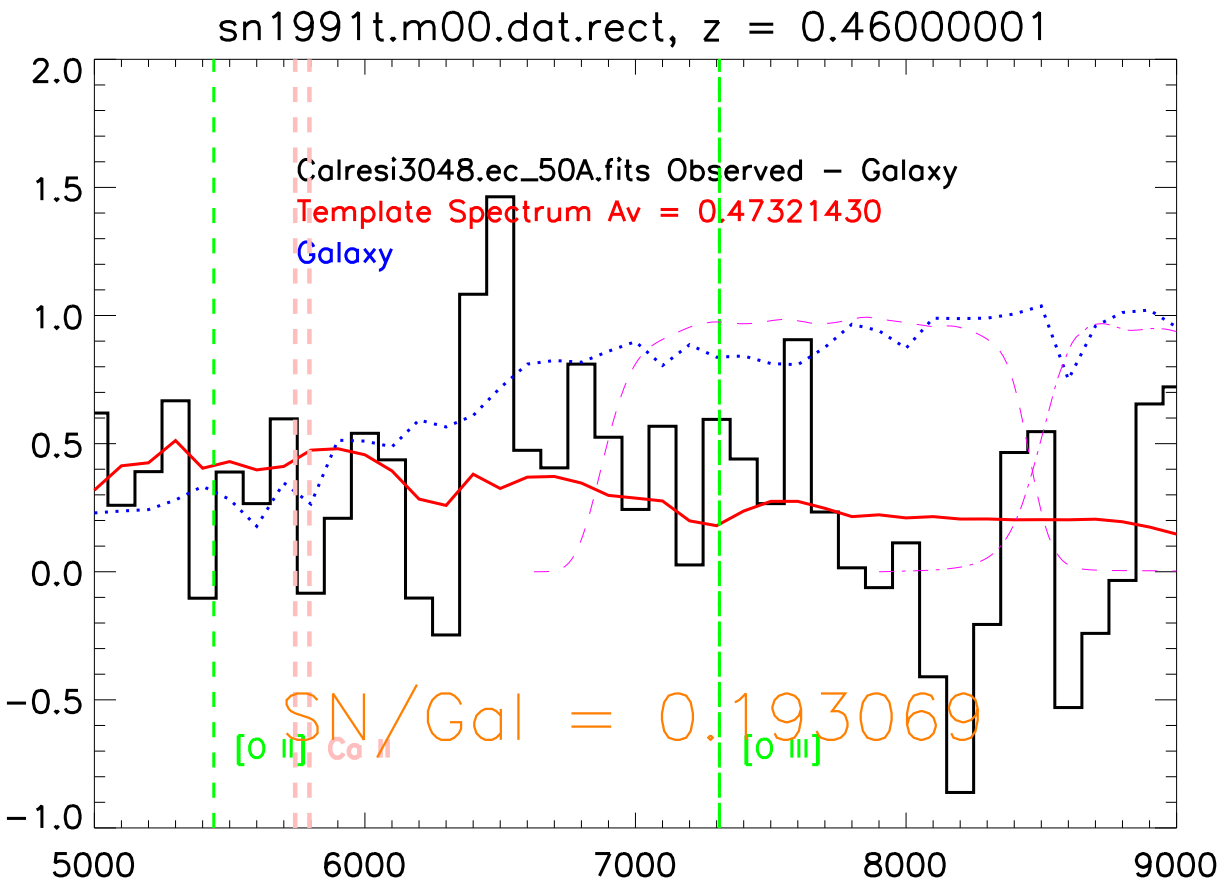

sn1994d.m04.dat.rect, z = 0.46000001
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = −1.0000000
Galaxy
SN/Gal = 0.203052
[O II]
[O III]
2.0
1.5
1.0
0.5
0.0
−0.5
−1.0
5000
6000
7000
8000
9000

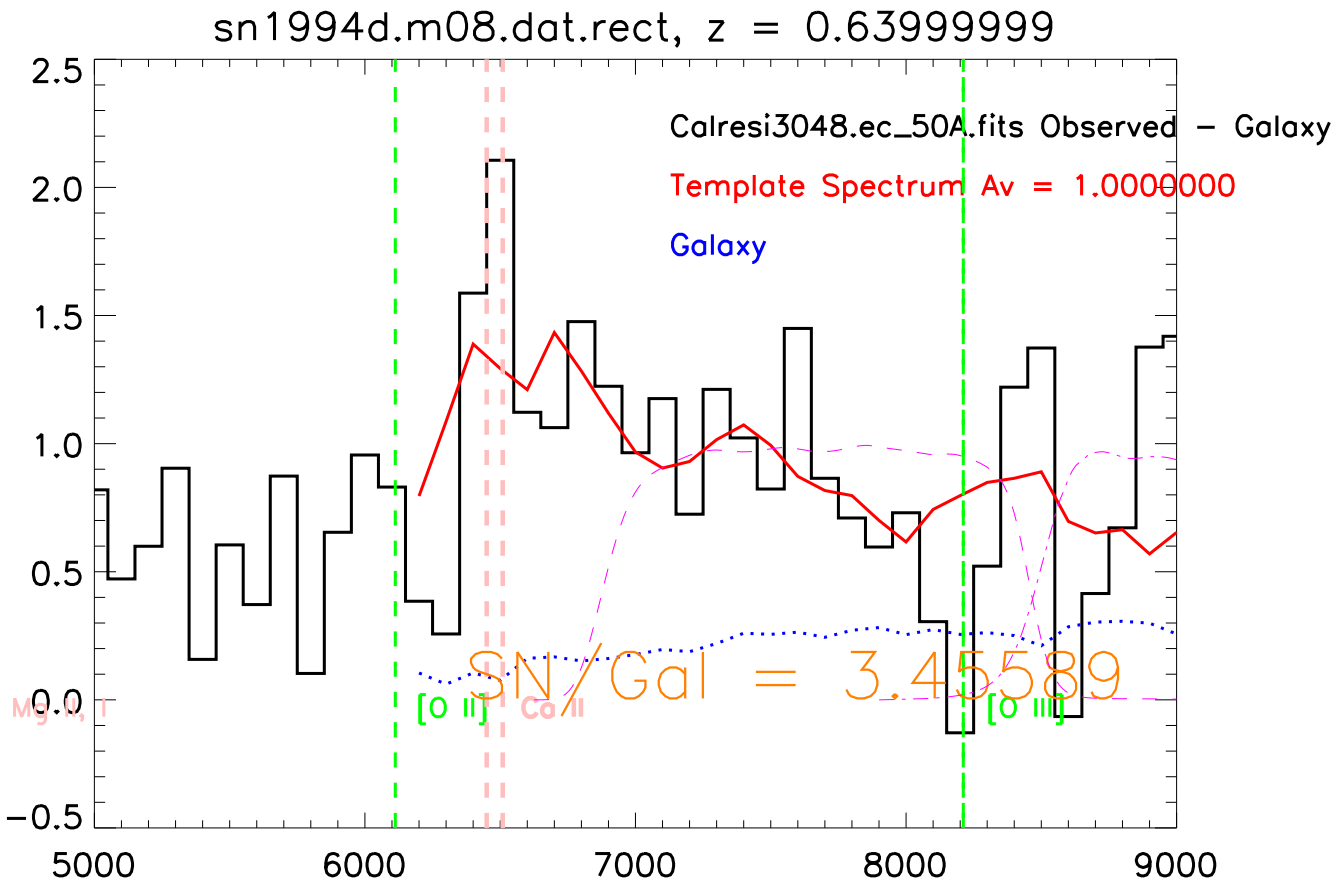

sn1994d.m07.dat.rect, z = 0.65999997
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = −1.0000000
Galaxy
SN/Gal = 0.667495
[O II]
Ca II
[O III]
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
−1.0
5000
6000
7000
8000
9000

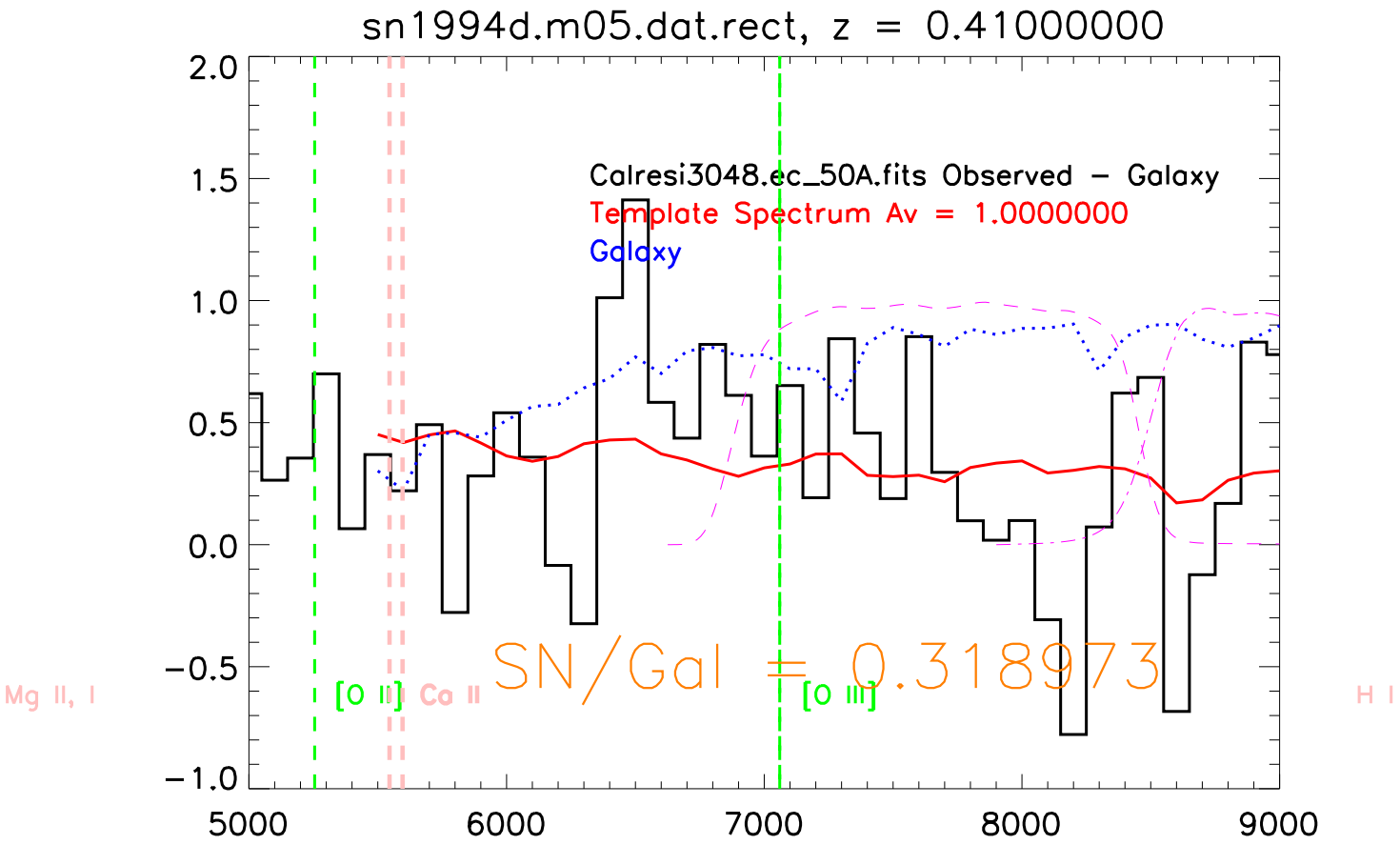

sn1991t.m07.dat.rect, z = 0.46000001
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = 0.70280614
Galaxy
SN/Gal = 0.235408
[O II]
[O III]
2.0
1.5
1.0
0.5
0.0
−0.5
−1.0
5000
6000
7000
8000
9000


sn1991t.m08.dat.rect, z = 0.46000001
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = 0.73596939
Galaxy
SN/Gal = 0.225871
[O II]
Ca II
[O III]
Mg II, I
H
2.0
1.5
1.0
0.5
0.0
−0.5
−1.0
5000
6000
7000
8000
9000


sn1991t.m03.dat.rect, z = 0.46000001
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = 0.48596939
Galaxy
SN/Gal = 0.202682
[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


sn1991t.m00.dat.rect, z = 0.46000001
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = 0.47321430
Galaxy
SN/Gal = 0.193069
[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


sn1994d.m08.dat.rect, z = 0.63999999
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = 3.45589
[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


sn1994d.m05.dat.rect, z = 0.41000000
Calresi3048.ec_50A.fits Observed − Galaxy
Template Spectrum Av = 1.0000000
Galaxy
SN/Gal = 0.318973
Mg II, I
[O II]
Ca II
[O III]
H I
2.0
1.5
1.0
0.5
0.0
−0.5
−1.0
5000
6000
7000
8000
9000