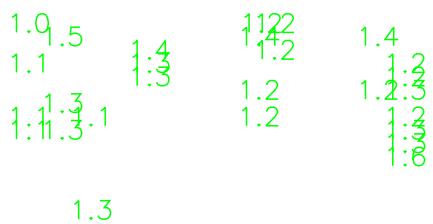
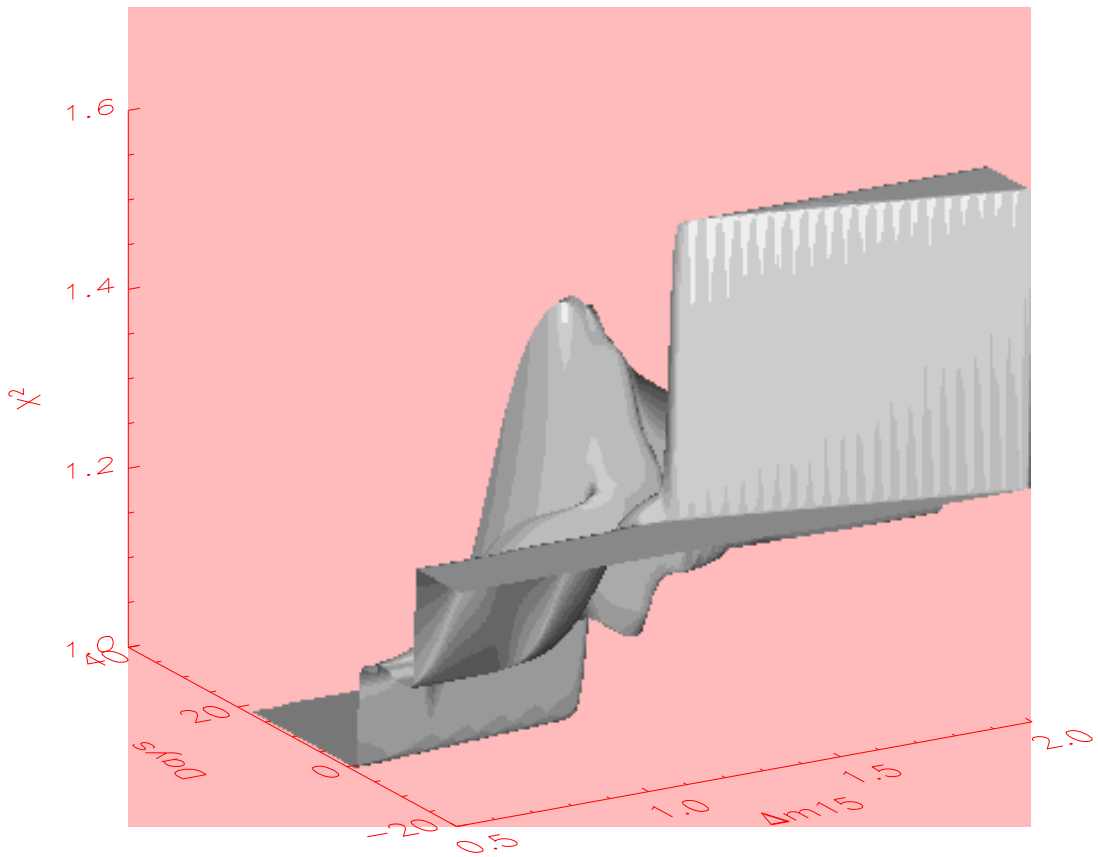
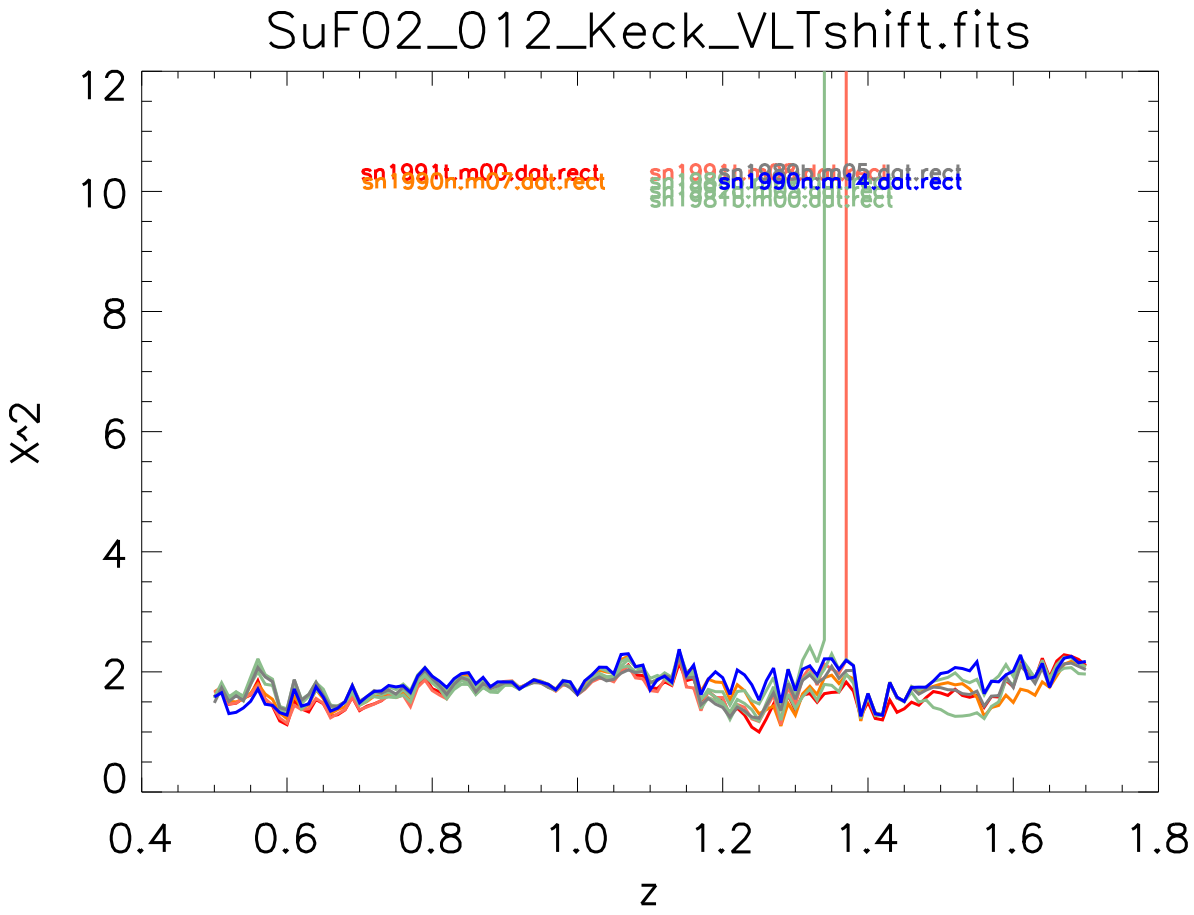
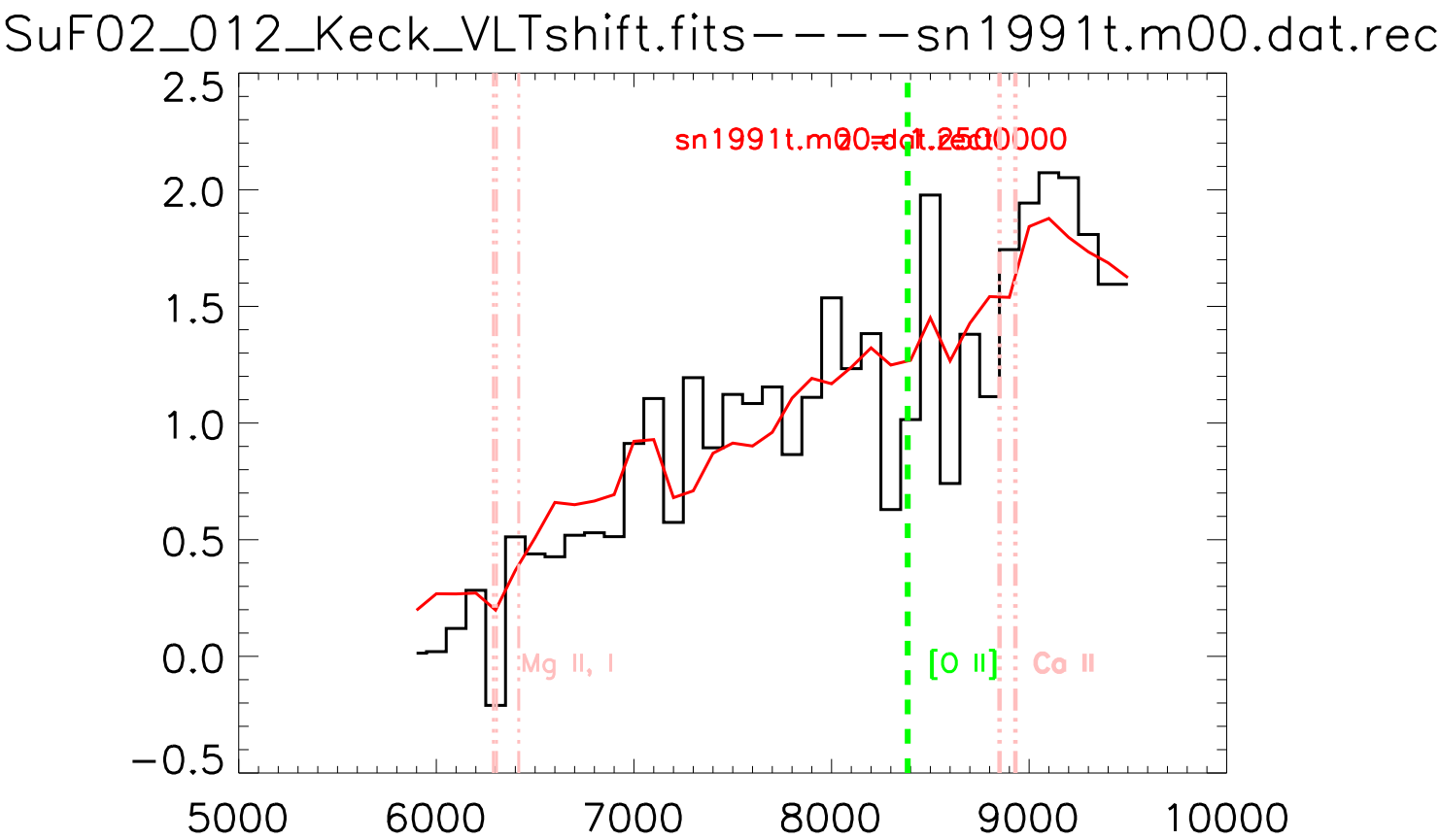
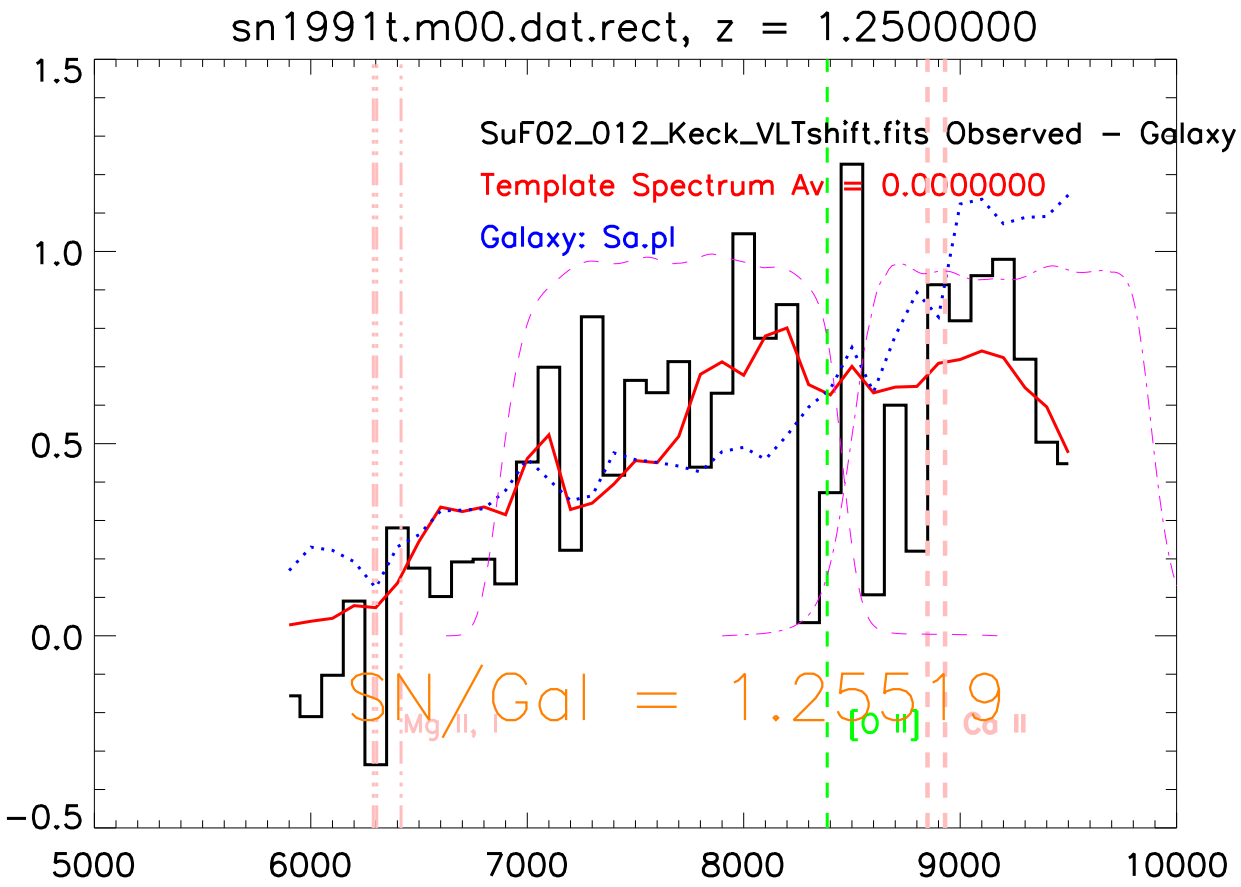


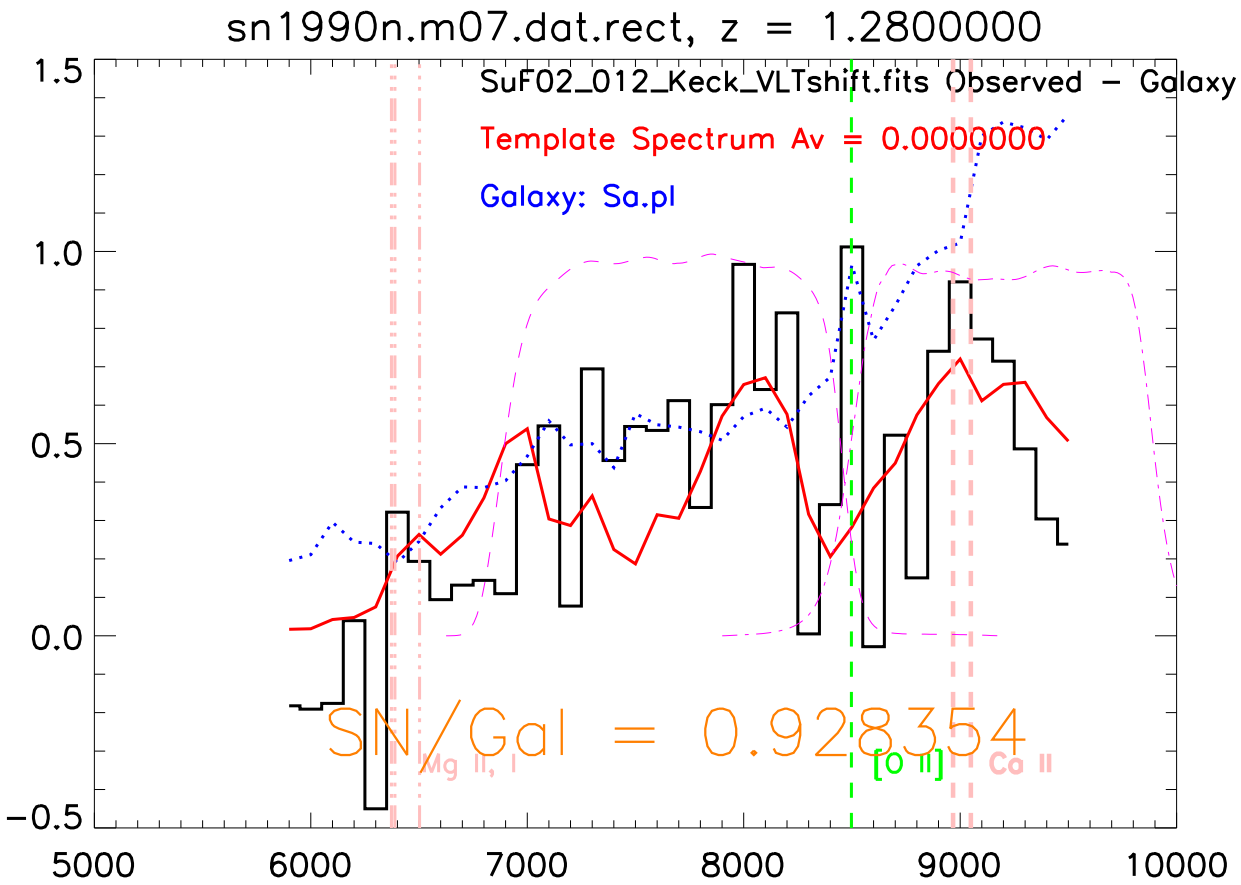


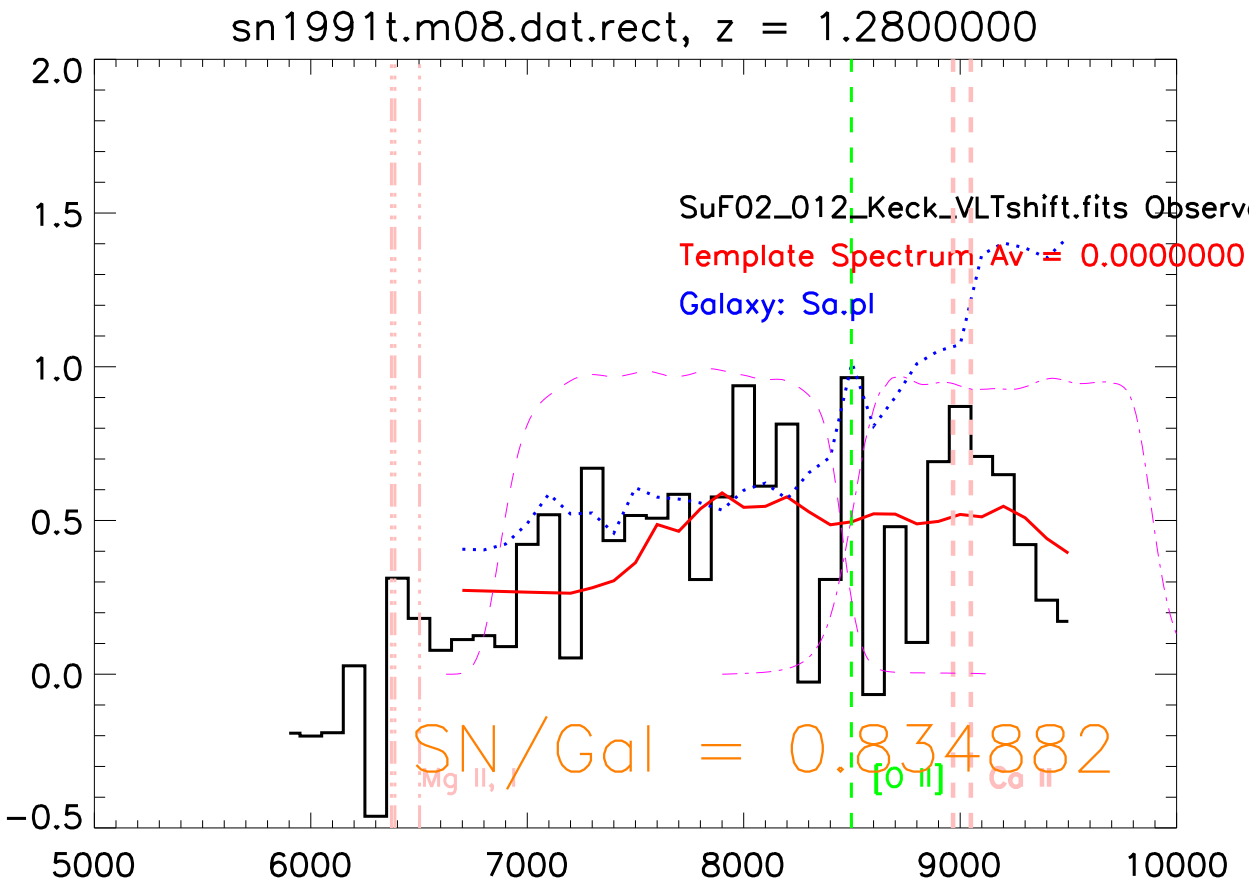
1.6
1.4
1.2
1.0
χ^2
40
20
0
−20
Days
0.5
1.0
1.5
2.0
Δm15

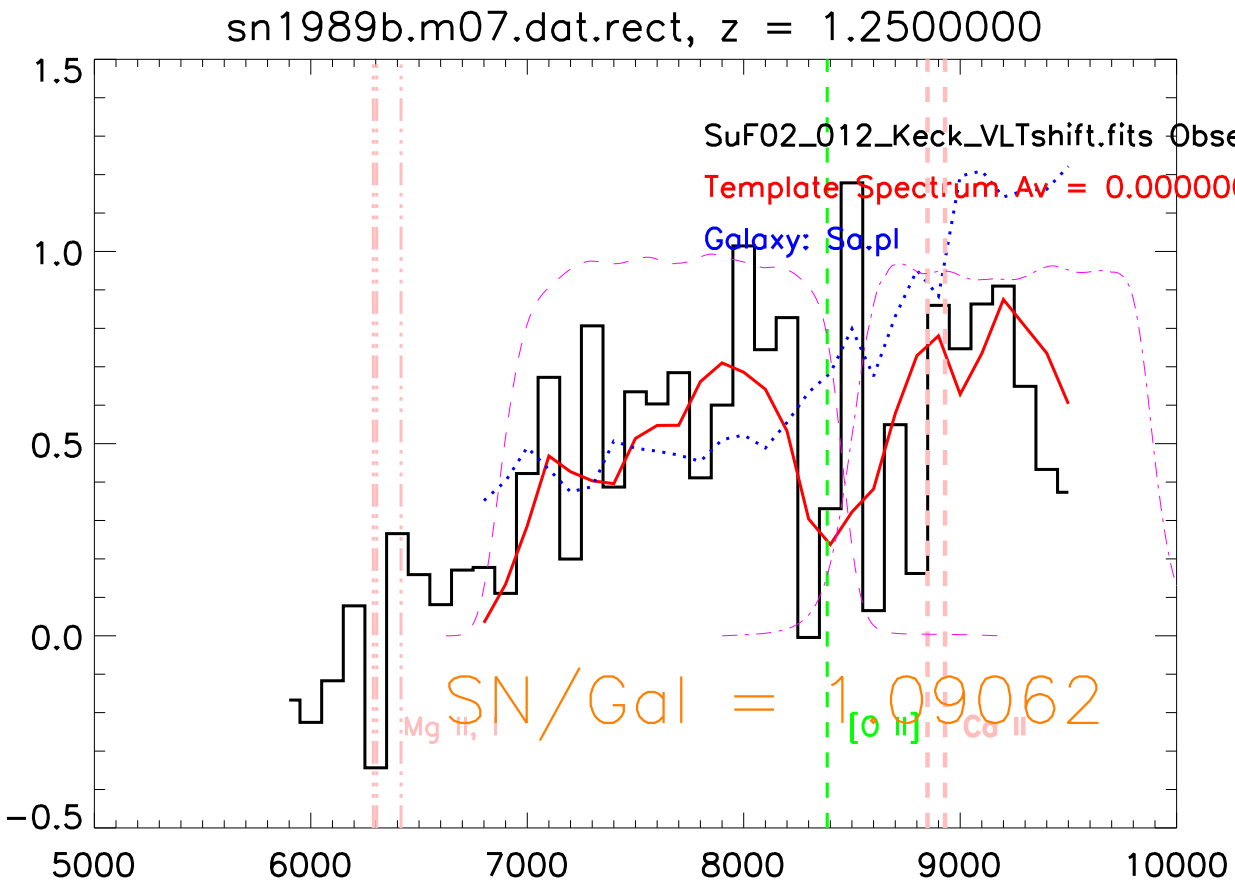

SuF02_012_Keck_VLTshift.fits
sn1991t:m00:dat:rect
sn1990n:m14:dat:rect
X^2
z
0
2
4
6
8
10
12
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8

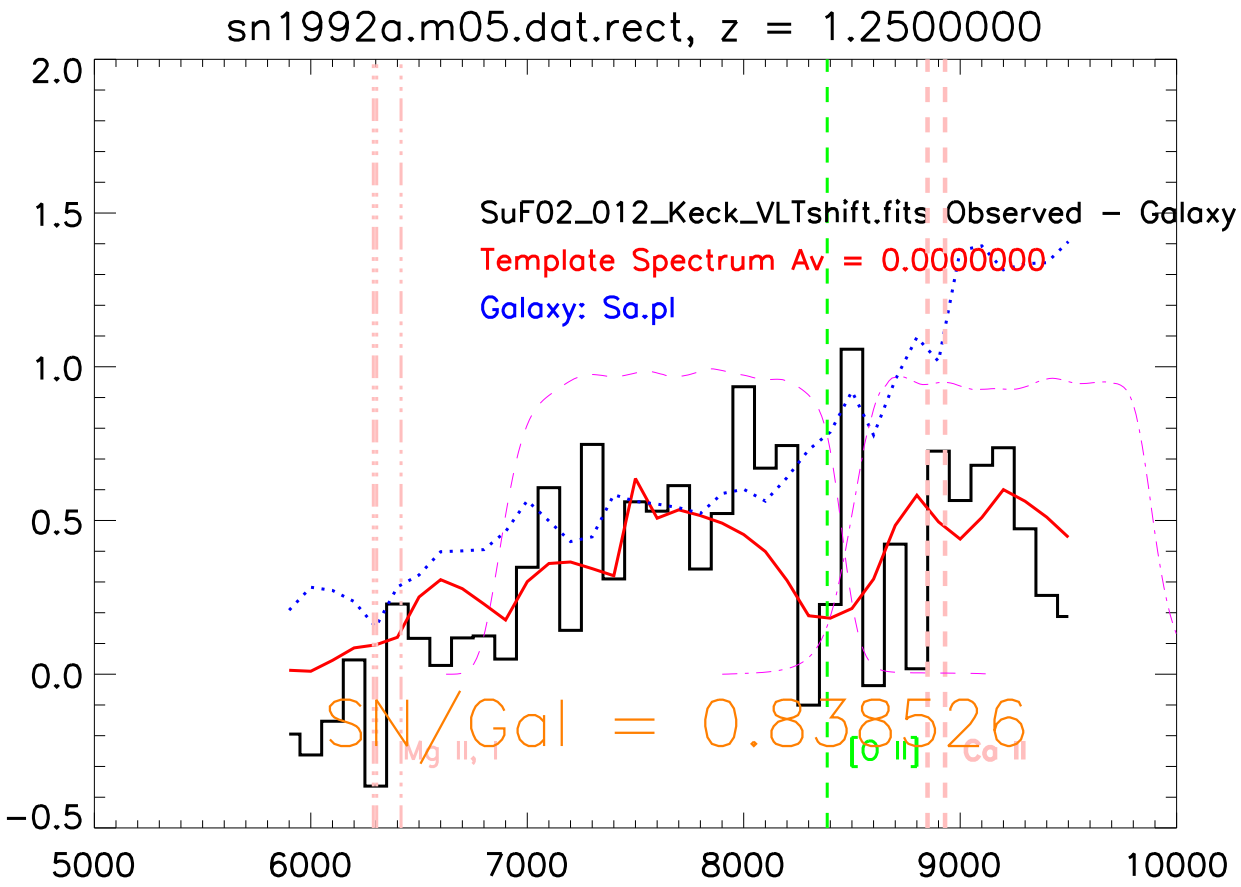

SuF02_012_Keck_VLTshift.fits----sn1991t.m00.dat.rec
sn1991t.m00.dat.red
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000
10000
Mg II, I
[O II]
Ca II

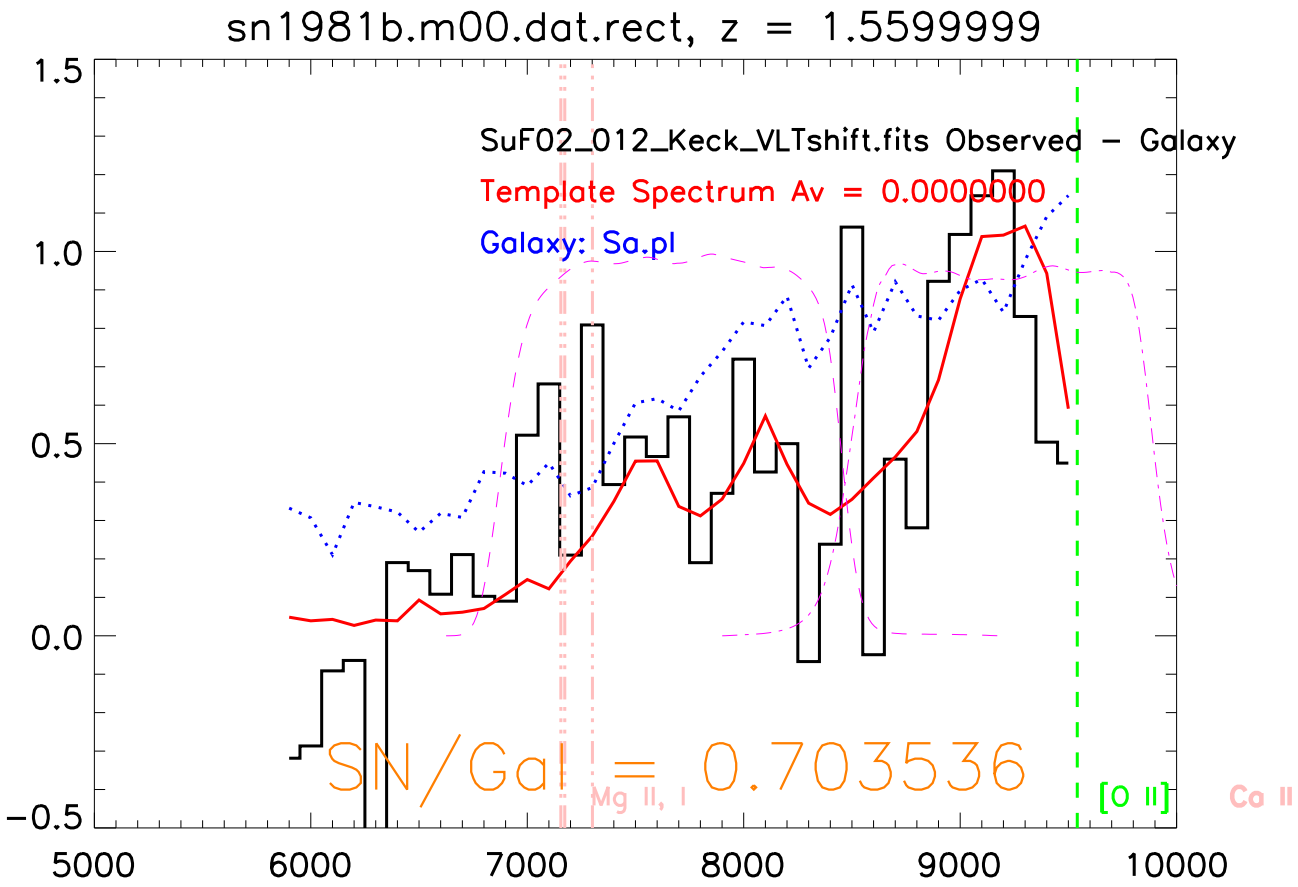

sn1991t.m00.dat.rect, z = 1.2500000
SuF02_012_Keck_VLTshift.fits Observed – Galaxy
Template Spectrum Av = 0.0000000
Galaxy: Sa.pl
SN/Gal = 1.25519
[O II]
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000
10000

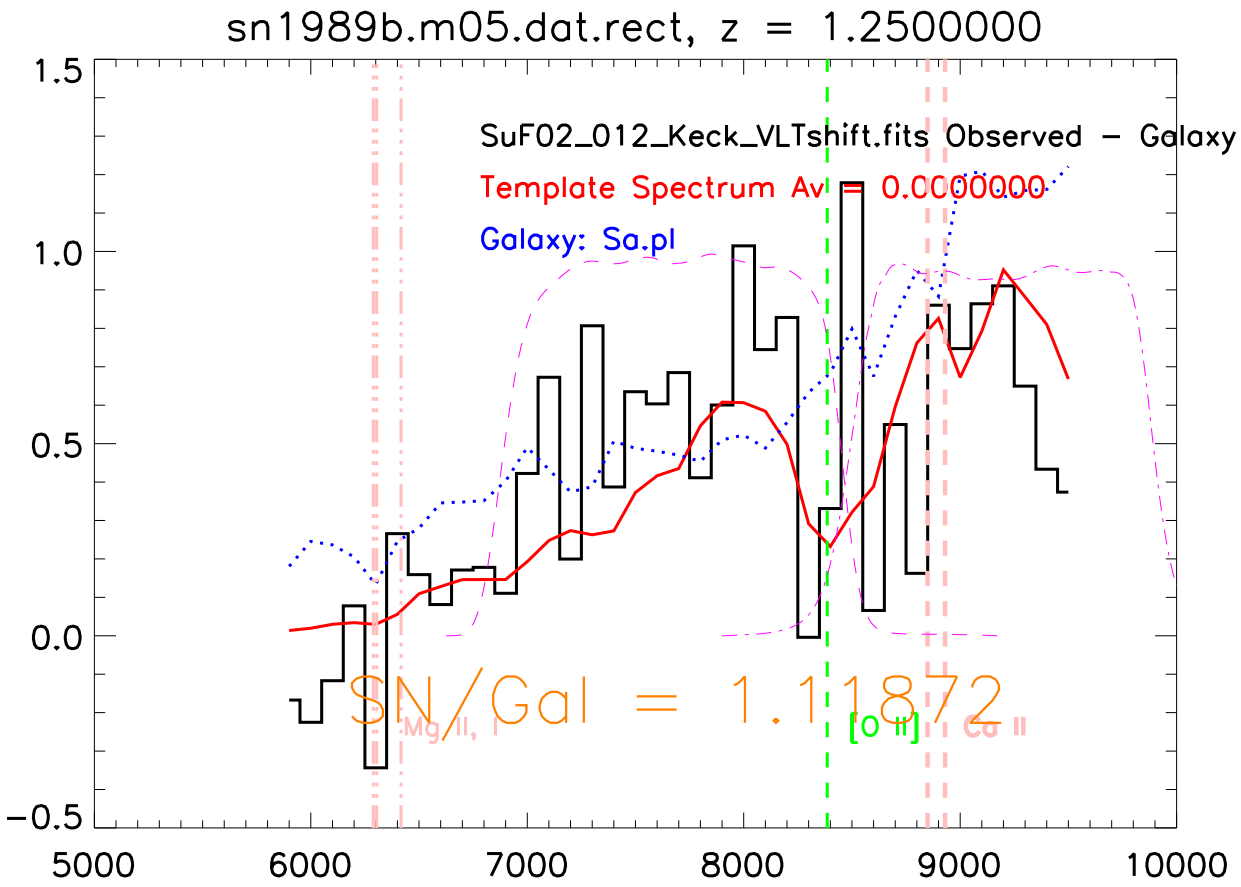

sn1990n.m07.dat.rect, z = 1.2800000
SuF02_012_Keck_VLTshift.fits Observed – Galaxy
Template Spectrum Av = 0.0000000
Galaxy: Sa.pl
SN/Gal = 0.928354
Mg II, I
[O II]
Ca II
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000
10000

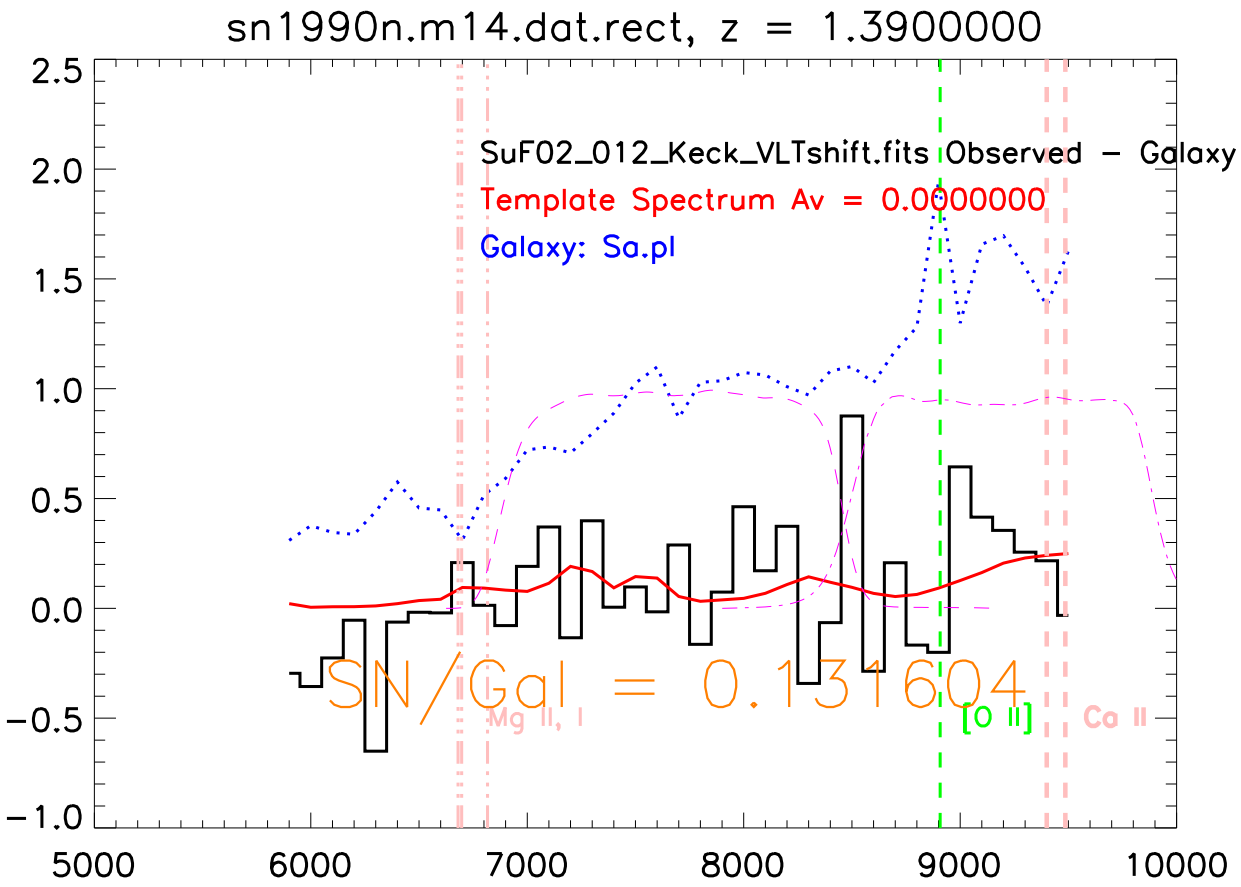

sn1991t.m08.dat.rect, z = 1.2800000
SuF02_012_Keck_VLTshift.fits Observed – Gal
Template Spectrum Av = 0.0000000
Galaxy: Sa.pl
SN/Gal = 0.834882
[O II]
Ca II
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000
10000


sn1989b.m07.dat.rect, z = 1.2500000
SuF02_012_Keck_VLTshift.fits Observed – G
Template Spectrum Av = 0.0000000
Galaxy: Sa.pl
SN/Gal = 1.09062
Mg II,
[O II]
Ca II
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000
10000


sn1992a.m05.dat.rect, z = 1.2500000
SuF02_012_Keck_VLTshift.fits Observed − Galaxy
Template Spectrum Av = 0.0000000
Galaxy: Sa.pl
SN/Gal = 0.838526
Mg II, 1
[O II]
Ca II
2.0
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000
10000


sn1981b.m00.dat.rect, z = 1.5599999
SuF02_012_Keck_VLTshift.fits Observed − Galaxy
Template Spectrum Av = 0.0000000
Galaxy: Sa.pl
SN/Gal = 0.703536
Mg II, I
[O II]
Ca II
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000
10000


sn1989b.m05.dat.rect, z = 1.2500000
SuF02_012_Keck_VLTshift.fits Observed – Galaxy
Template Spectrum Av = 0.0000000
Galaxy: Sa.pl
SN/Gal = 1.11872
[O II]
1.5
1.0
0.5
0.0
−0.5
5000
6000
7000
8000
9000
10000


sn1990n.m14.dat.rect, z = 1.3900000
SuF02_012_Keck_VLTshift.fits Observed − Galaxy
Template Spectrum Av = 0.0000000
Galaxy: Sa.pl
SN/Gal = 0.131604
Mg II, I
[O II]
Ca II
2.5
2.0
1.5
1.0
0.5
0.0
−0.5
−1.0
5000
6000
7000
8000
9000
10000