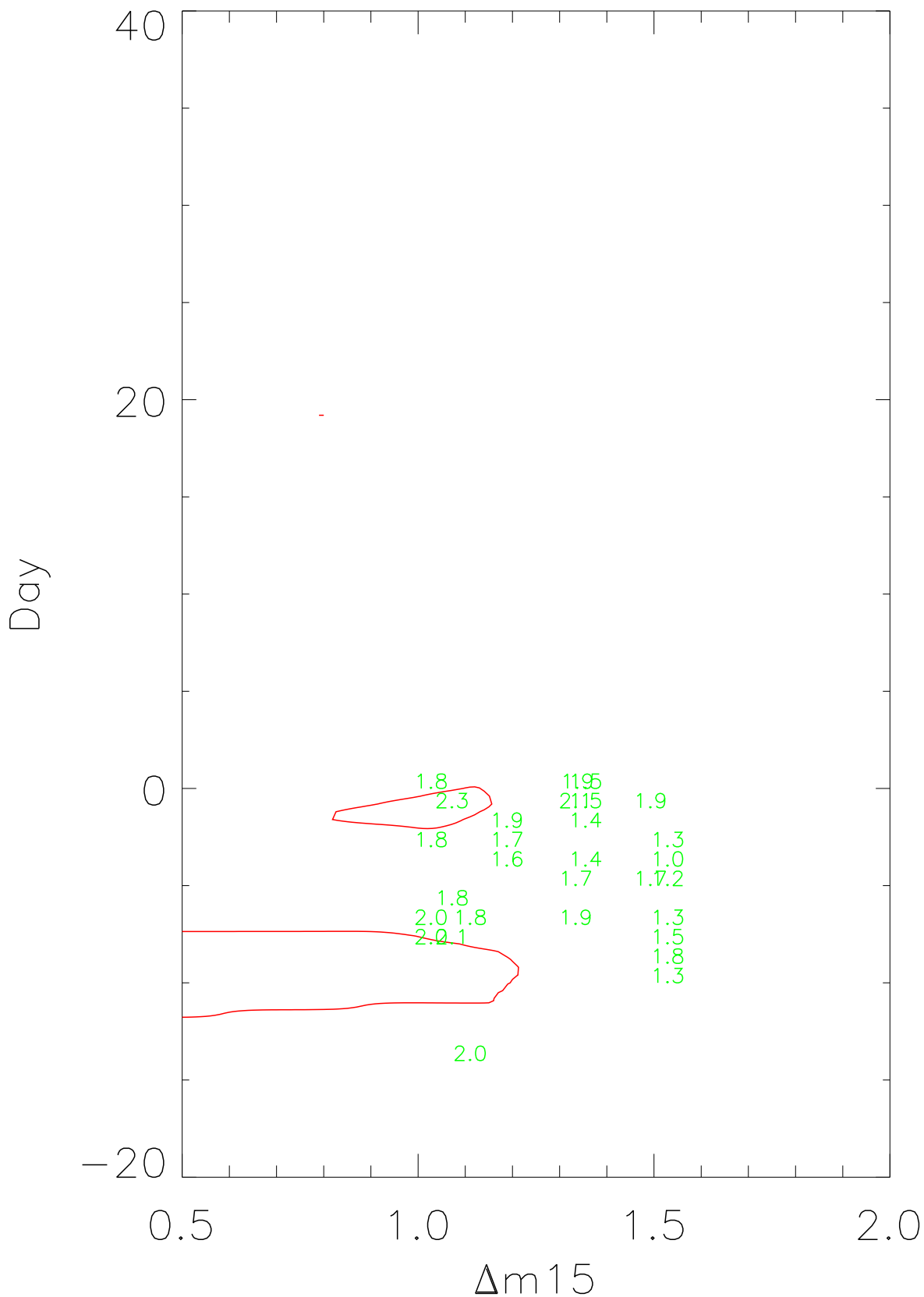
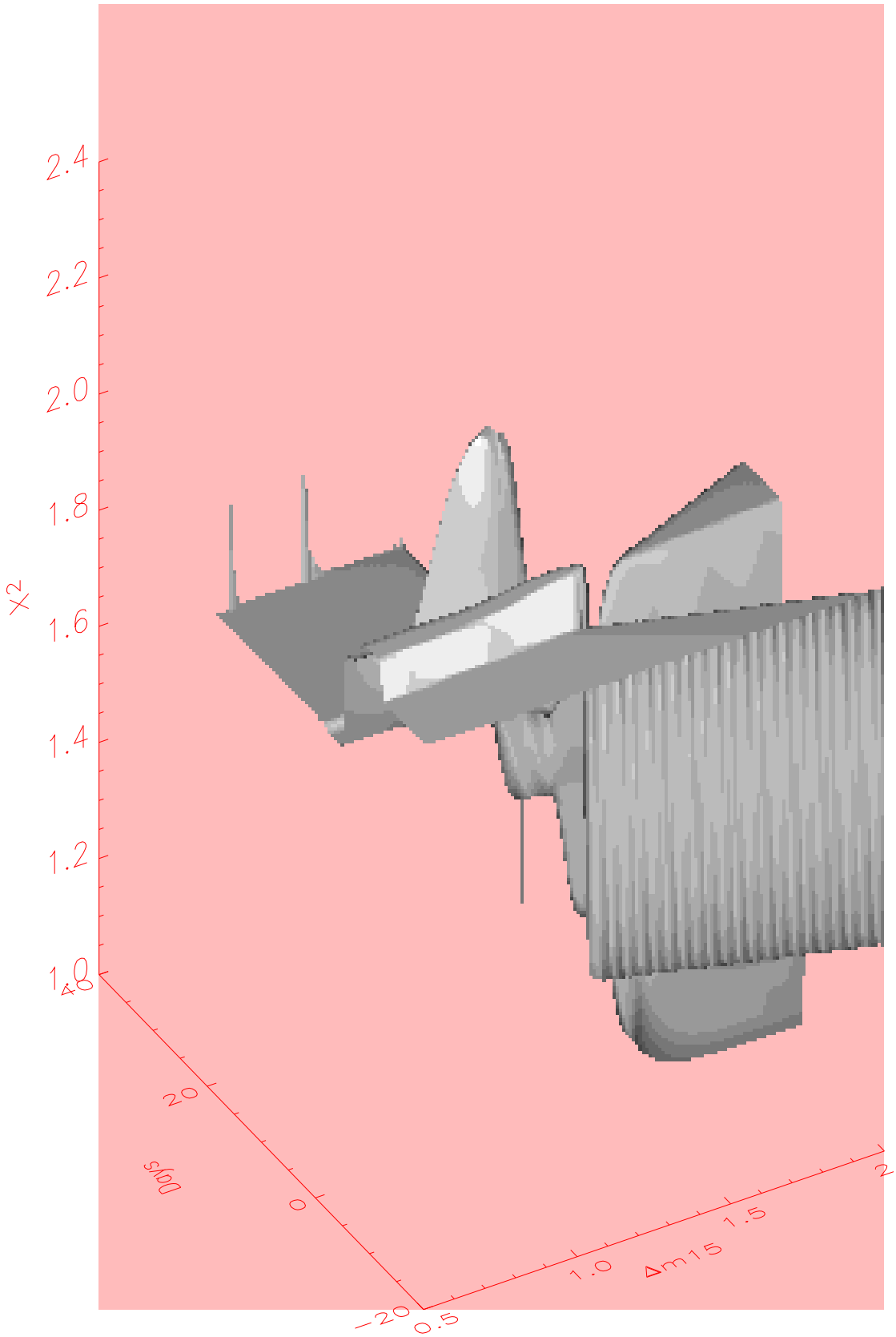
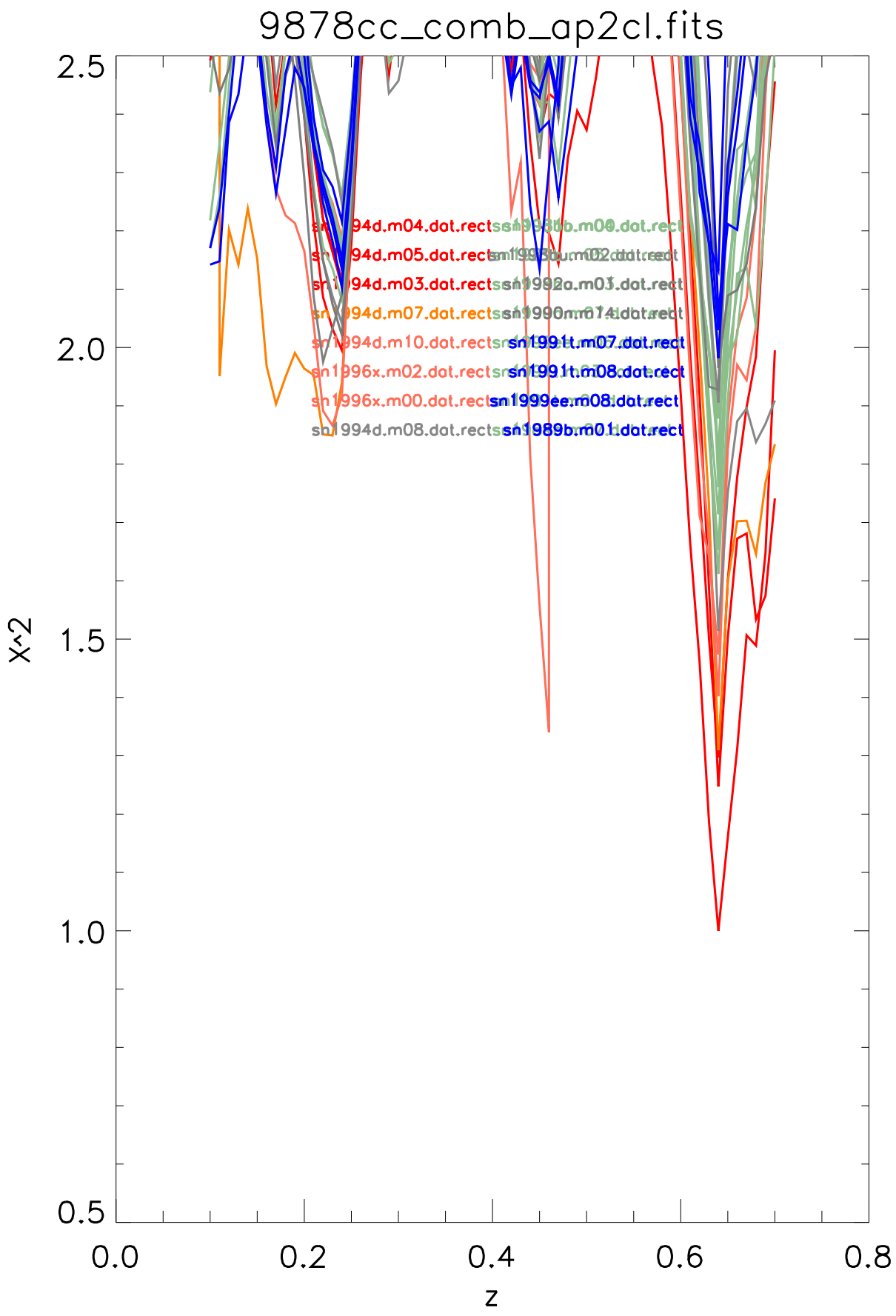
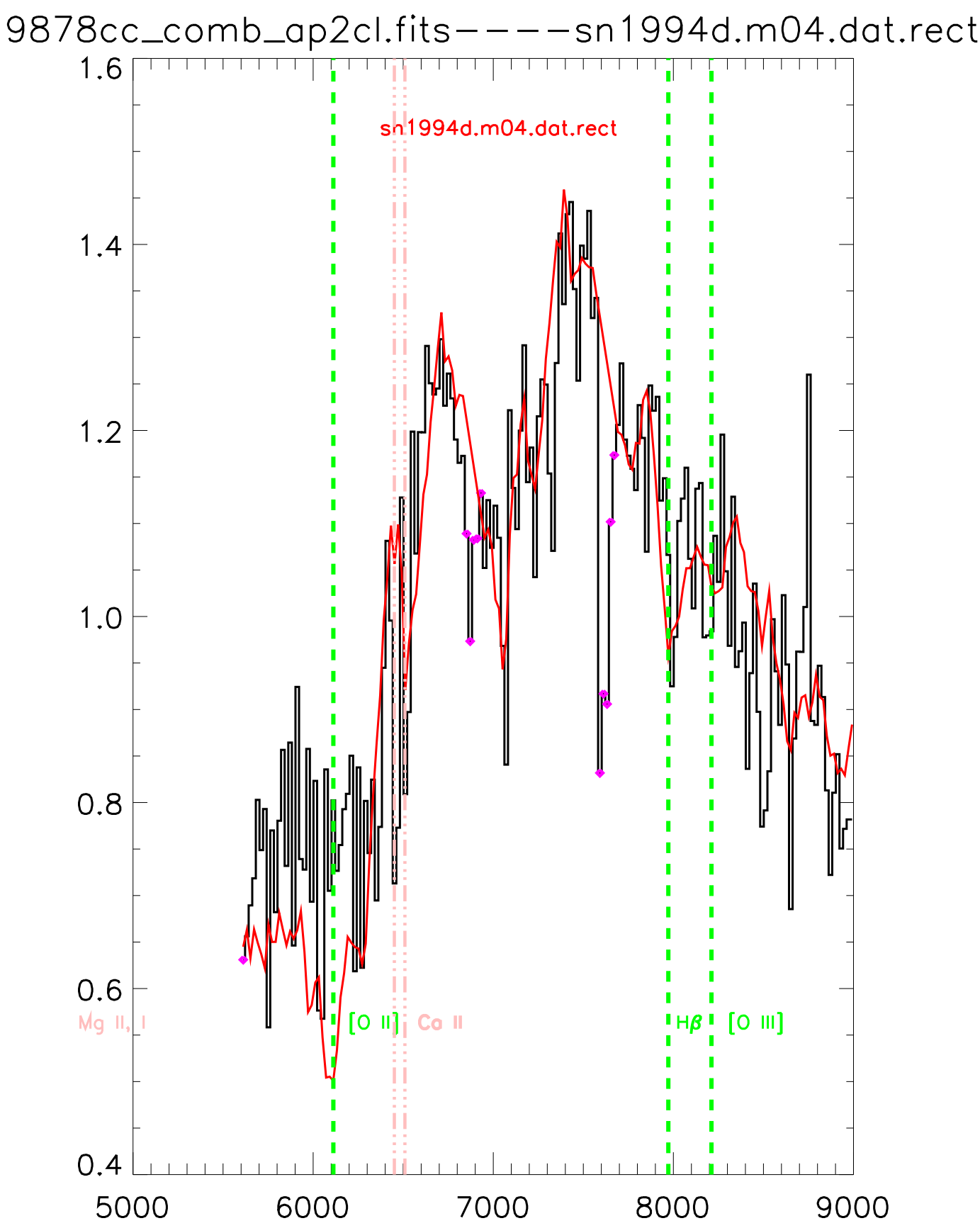
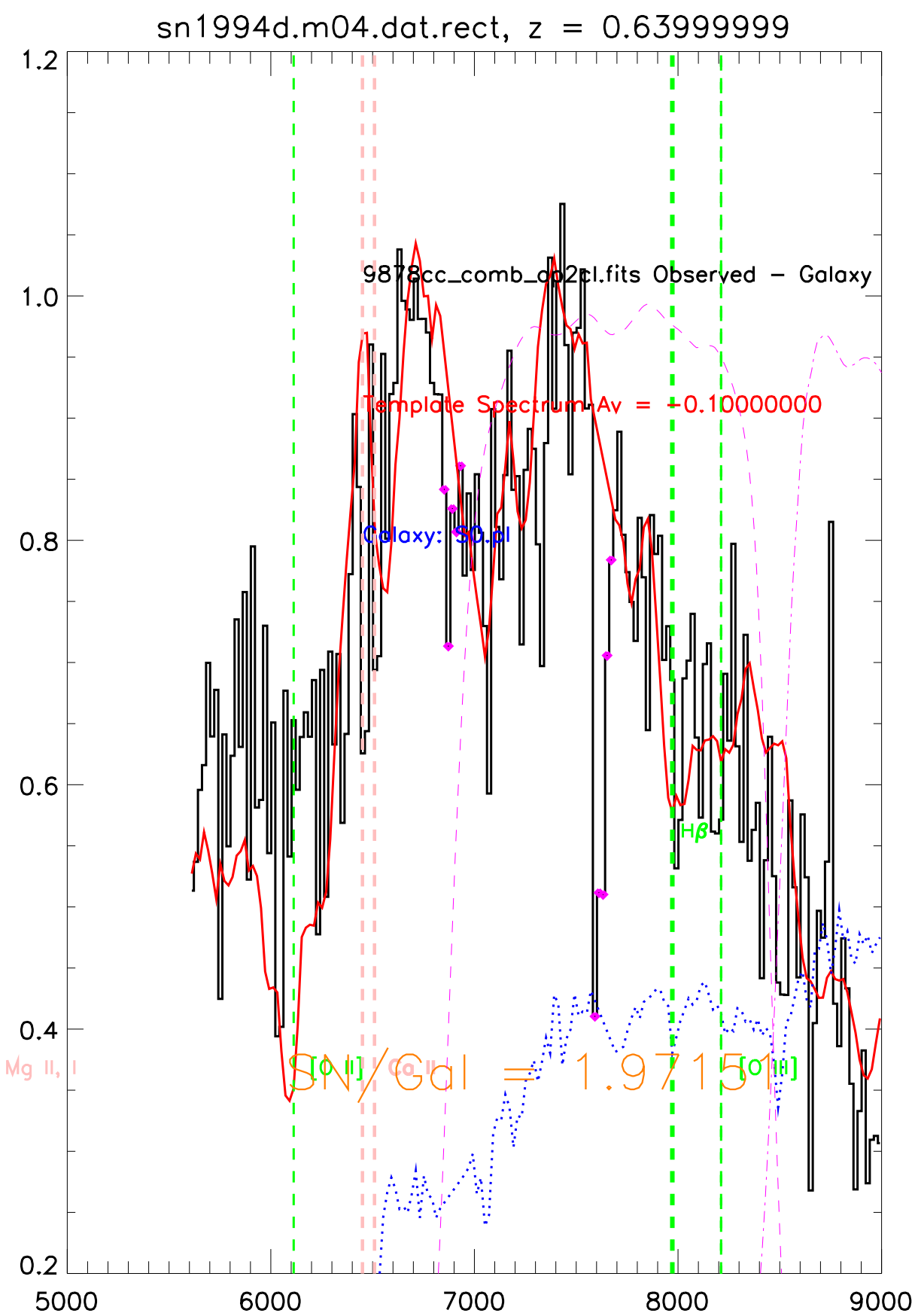

40
20
0
−20
Day
0.5
1.0
1.5
2.0
Δm15
1.8
2.3
1.8
1.9
1.7
1.6
1.8
2.0
1.8
1.9
1.4
1.4
1.7
1.9
1.9
1.3
1.0
1.2
1.3
1.5
1.8
1.3
2.0

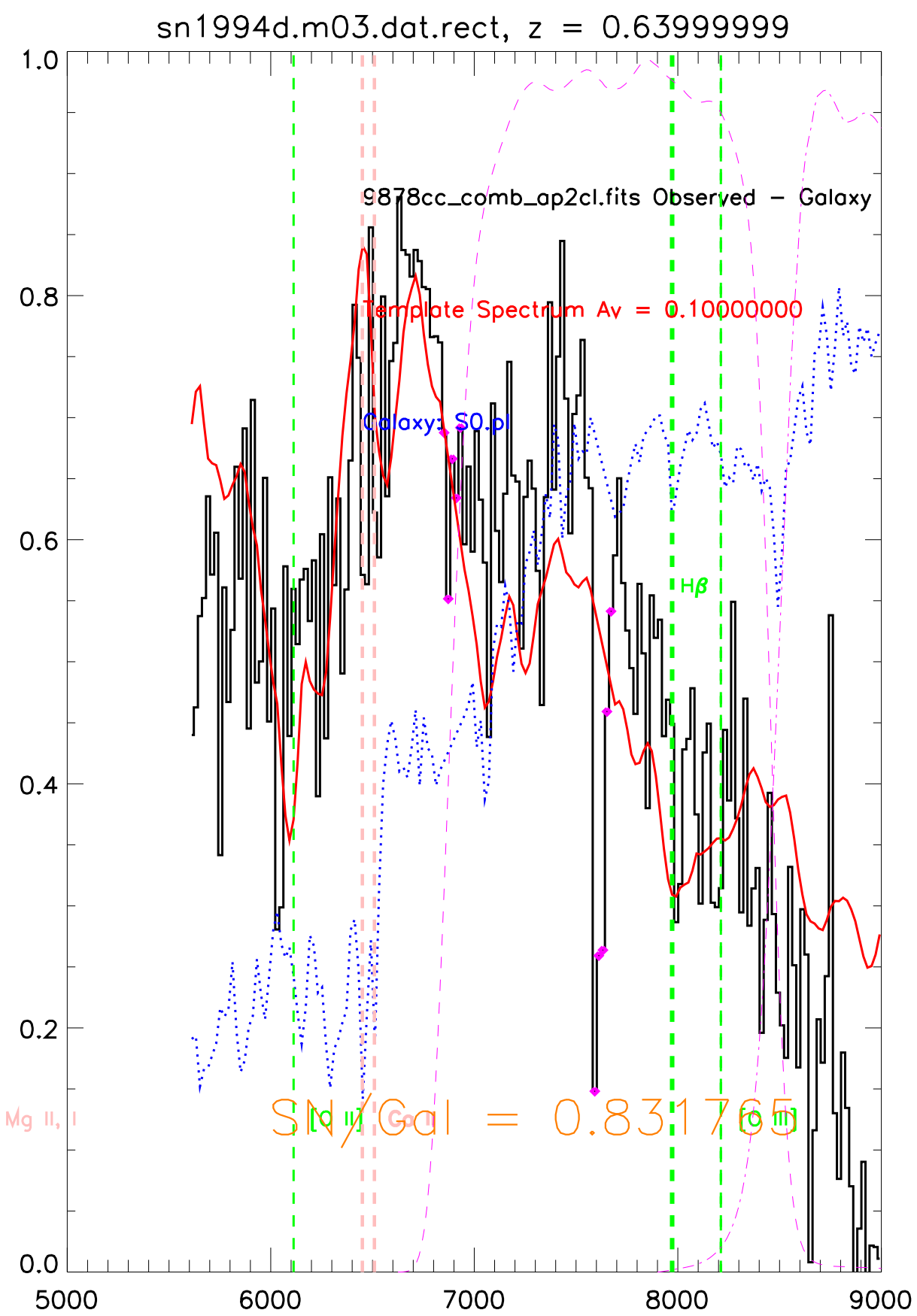

2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
χ2
40
20
0
−20
dots
0.5
1.0
1.5
2.0
Δm15

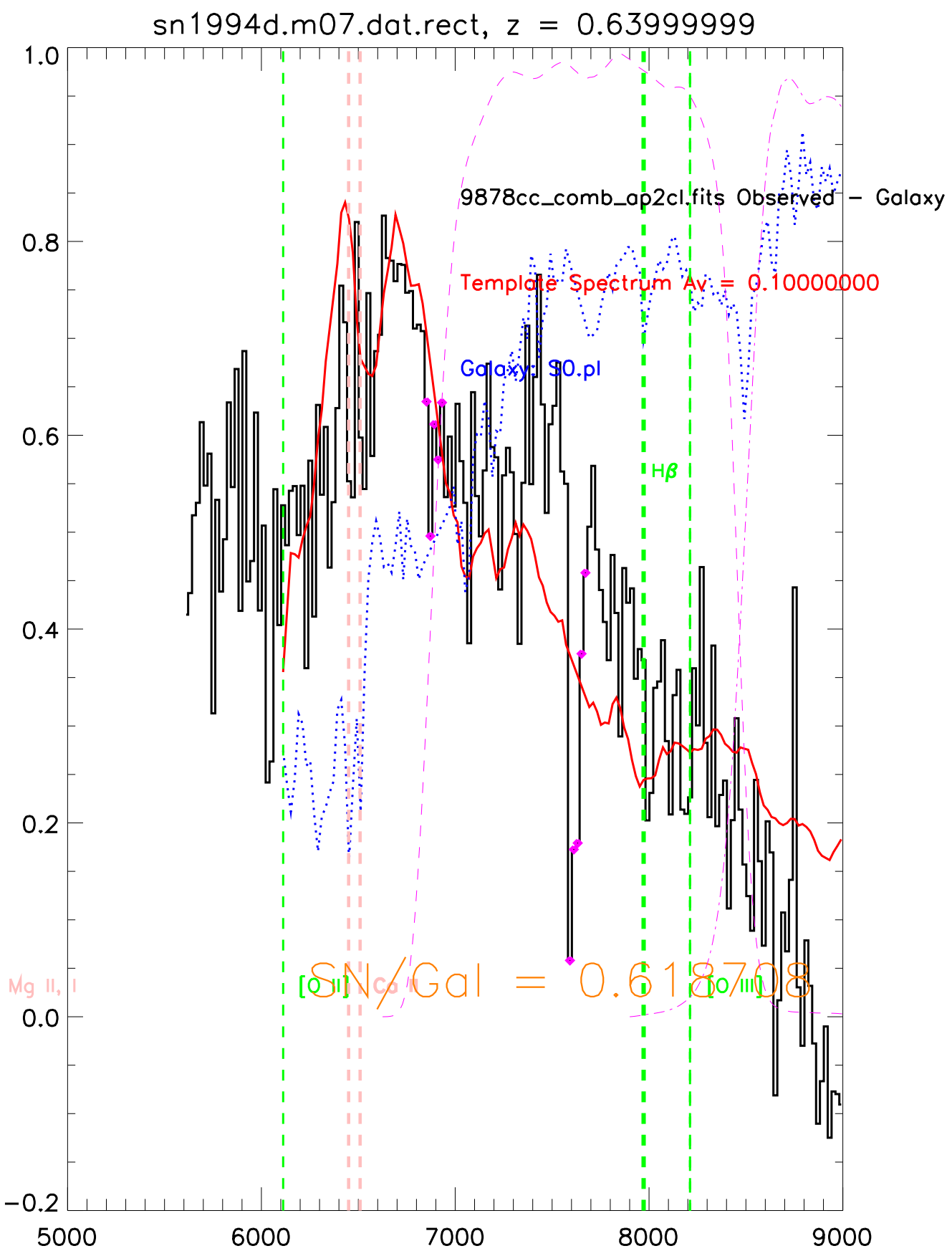

9878cc_comb_ap2cl.fits
2.5
2.0
1.5
1.0
0.5
X^2
0.0
0.2
0.4
0.6
0.8
z
sn1994d.m04.dat.rect
sn1994d.m05.dat.rect
sn1994d.m03.dat.rect
sn1994d.m07.dat.rect
sn1994d.m10.dat.rect
sn1996x.m02.dat.rect
sn1996x.m00.dat.rect
sn1994d.m08.dat.rect
sn1991t.m07.dat.rect
sn1991t.m08.dat.rect
sn1999ee.m08.dat.rect
sn1989b.m01.dat.rect

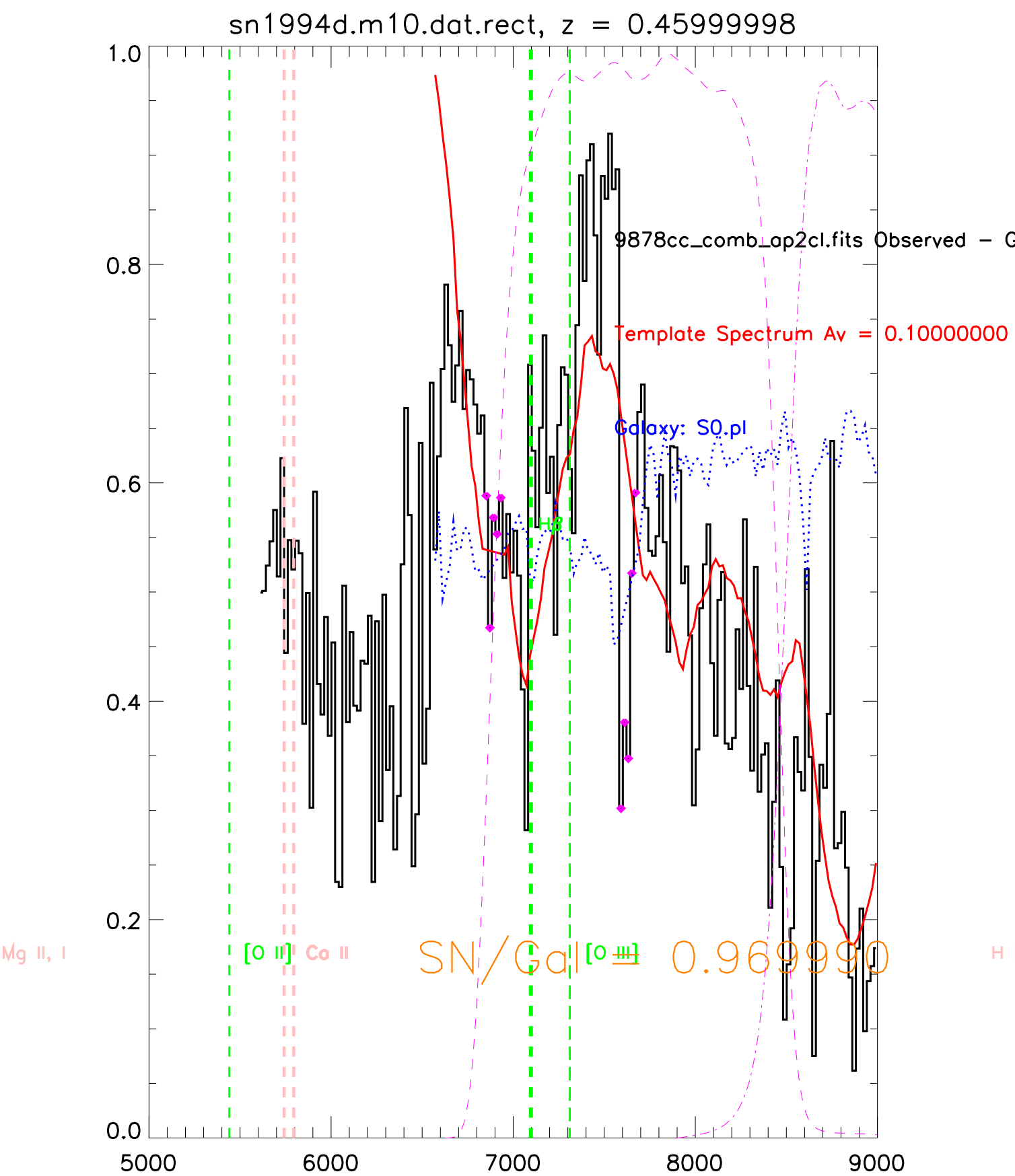

9878cc_comb_ap2cl.fits----sn1994d.m04.dat.rect
sn1994d.m04.dat.rect
1.6
1.4
1.2
1.0
0.8
0.6
0.4
5000
6000
7000
8000
9000
Mg II, I
[O II]
Ca II
Hβ
[O III]

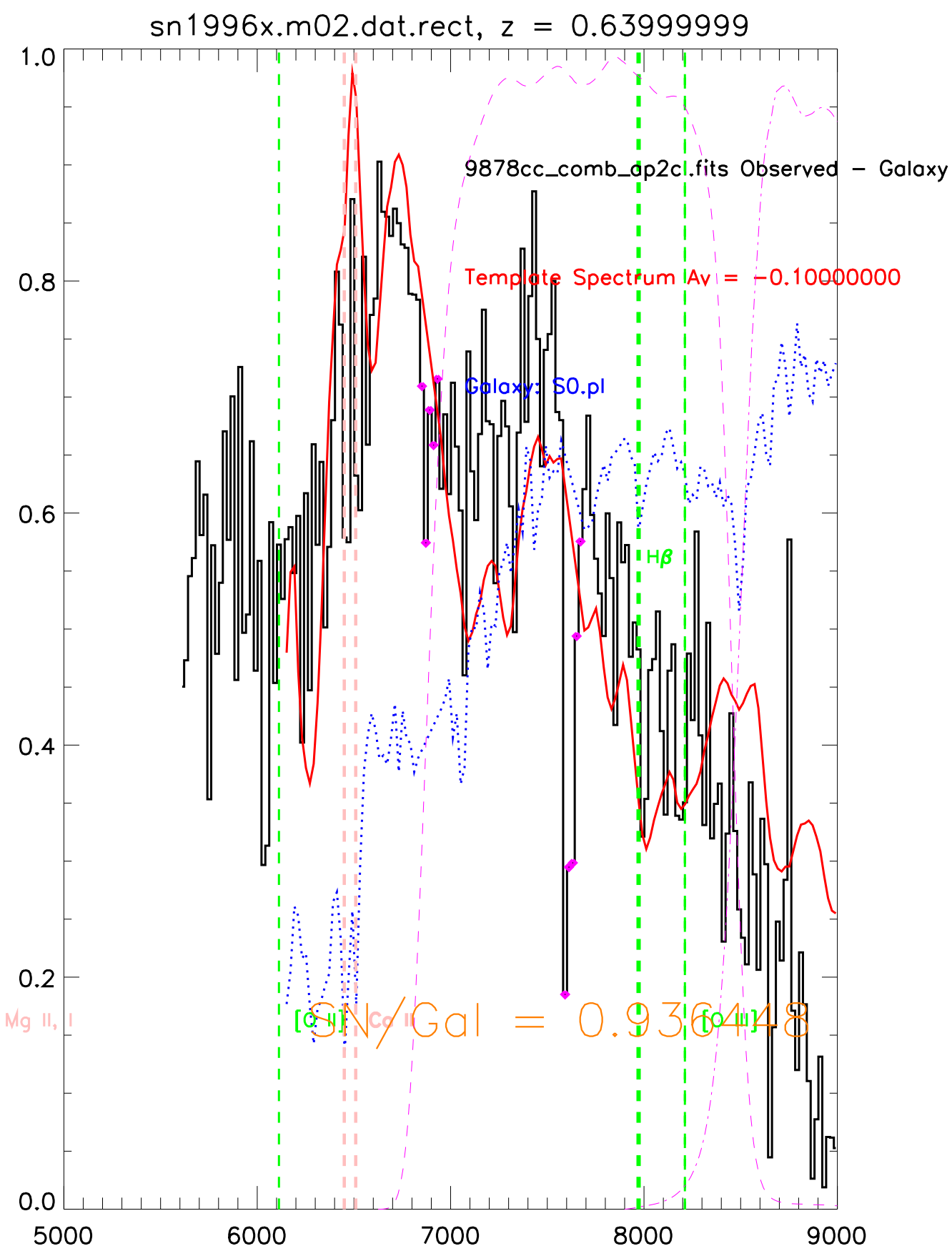

sn1994d.m04.dat.rect, z = 0.63999999
9878cc_comb_dp2cl.fits Observed – Galaxy
Template Spectrum, Av = 0.10000000
Galaxy: S0.pl
Hβ
[O II]
Ca II
[O III]
Mg II, I
SN/Gal = 1.97151
1.2
1.0
0.8
0.6
0.4
0.2
5000
6000
7000
8000
9000

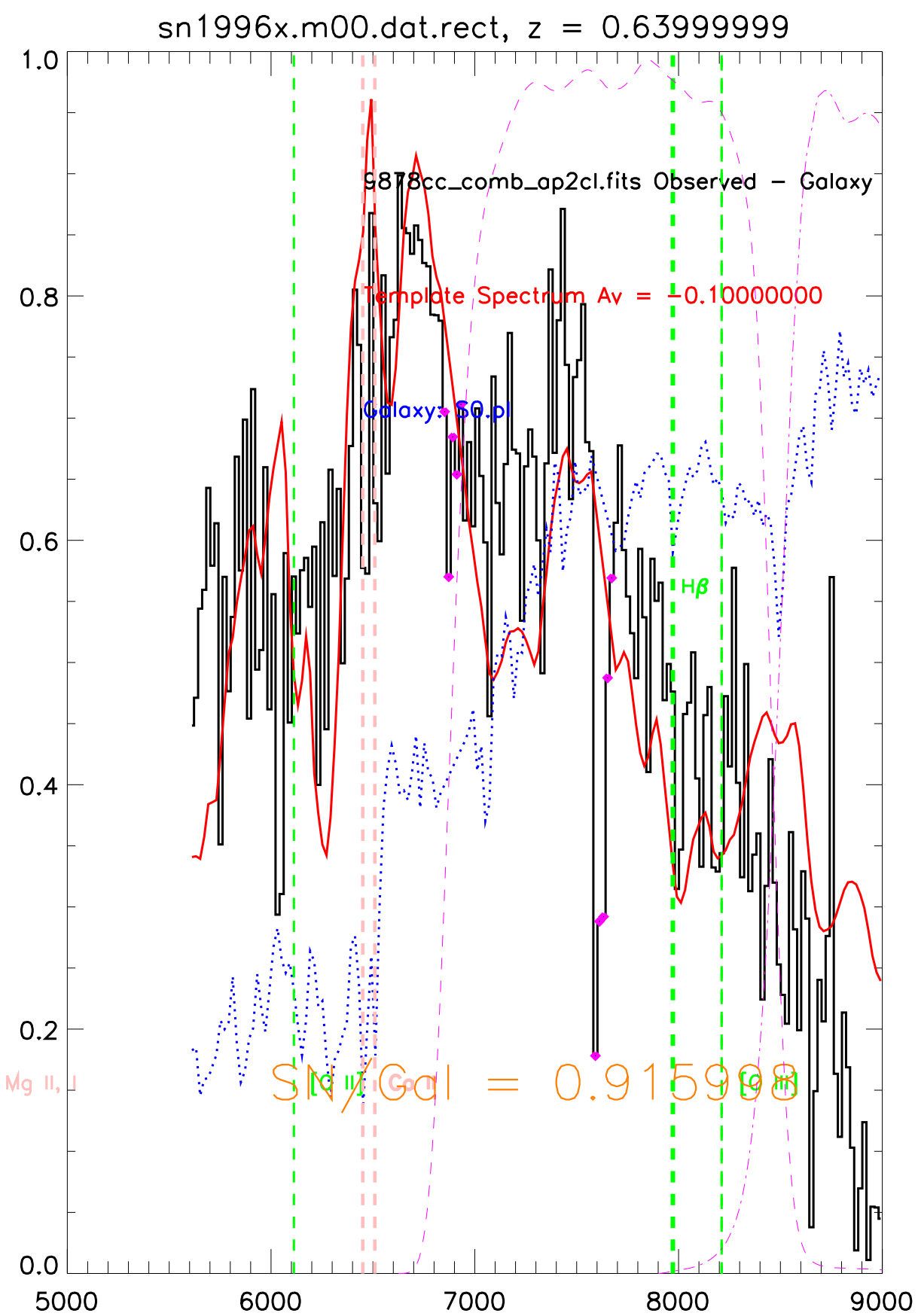
sn1994d.m05.dat.rect, z = 0.63999999
9878cc_comb_ap2cl.fits Observed – Galaxy
Template Spectrum Av = −0.10000000
Galaxy: S0.pl
Hβ
[O II]
[O III]
SN/Gal = 1.015137
1.0
0.8
0.6
0.4
0.2
0.0
5000
6000
7000
8000
9000

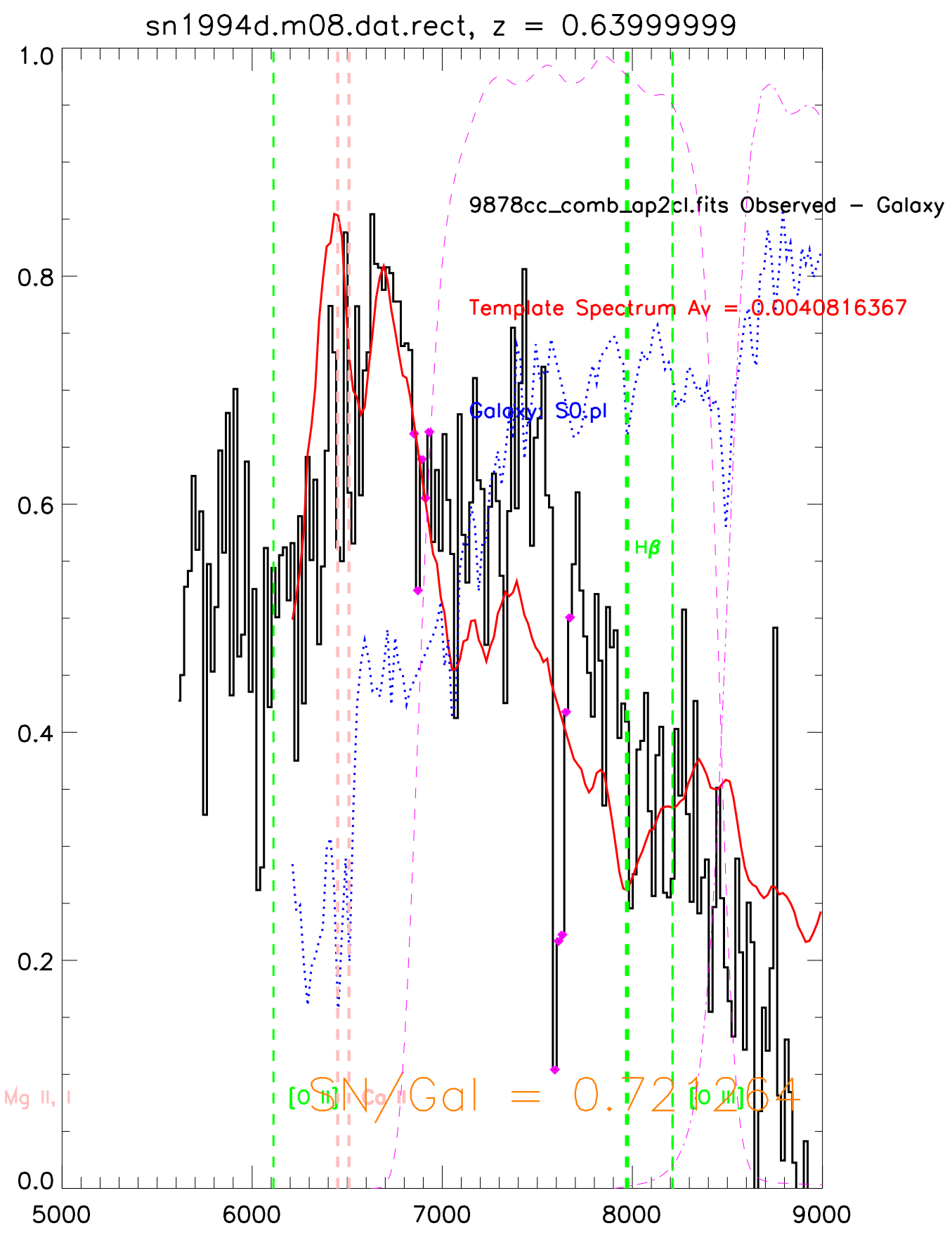

sn1994d.m03.dat.rect, z = 0.63999999
9878cc_comb_ap2cl.fits Observed − Galaxy
Template Spectrum Av = 0.10000000
Galaxy: S0.pl
Hβ
Mg II, I
[O II]
Ca II
[O III]
S/N Gal = 0.831765
1.0
0.8
0.6
0.4
0.2
0.0
5000
6000
7000
8000
9000

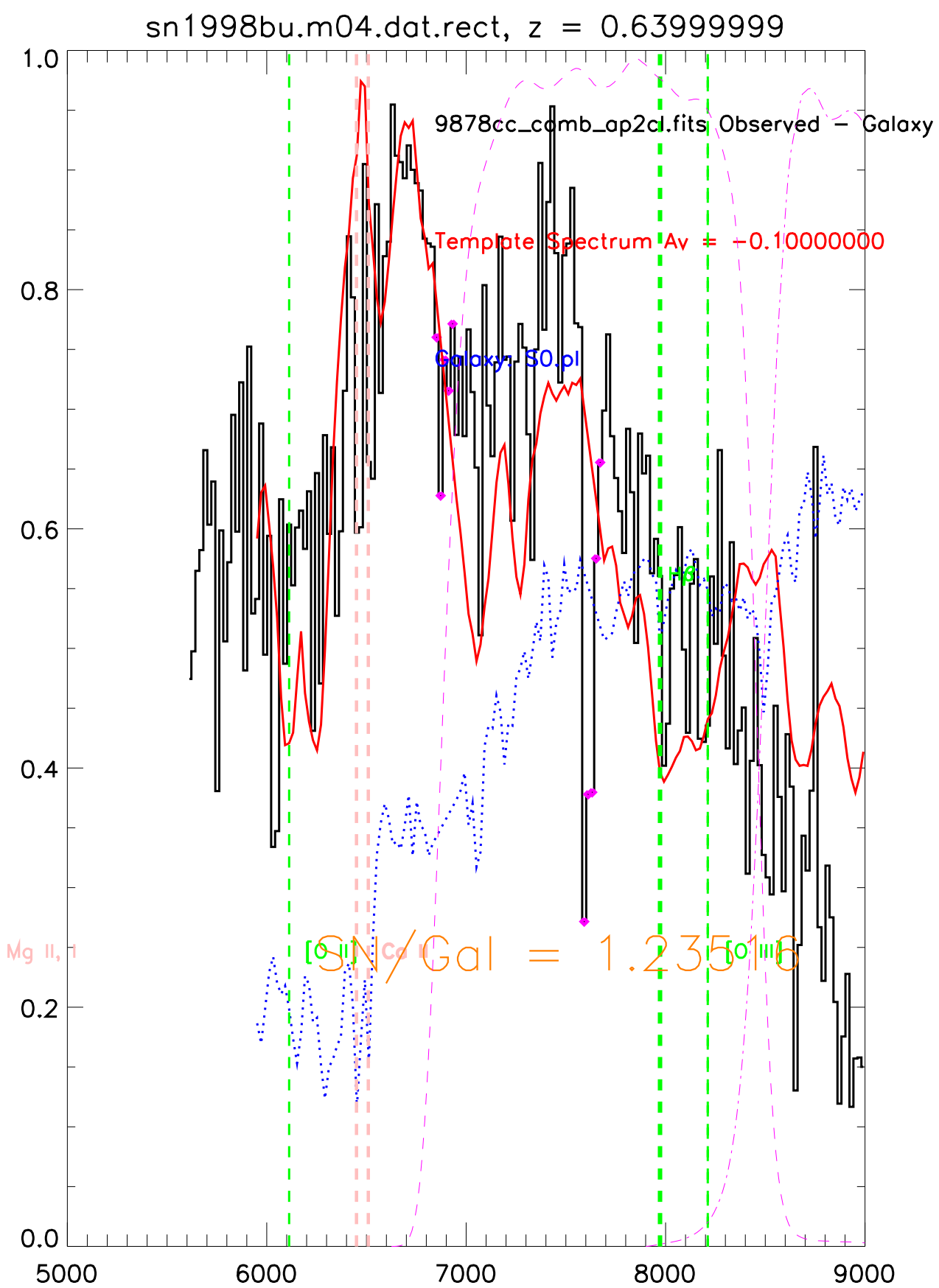

sn1994d.m07.dat.rect, z = 0.63999999
9878cc_comb_ap2cl.fits Observed − Galaxy
Template Spectrum Av = 0.10000000
Galaxy: S0.pl
Hβ
SN/Gal = 0.618708
Mg II, I
[O II]
Ca K
[O III]
1.0
0.8
0.6
0.4
0.2
0.0
−0.2
5000
6000
7000
8000
9000

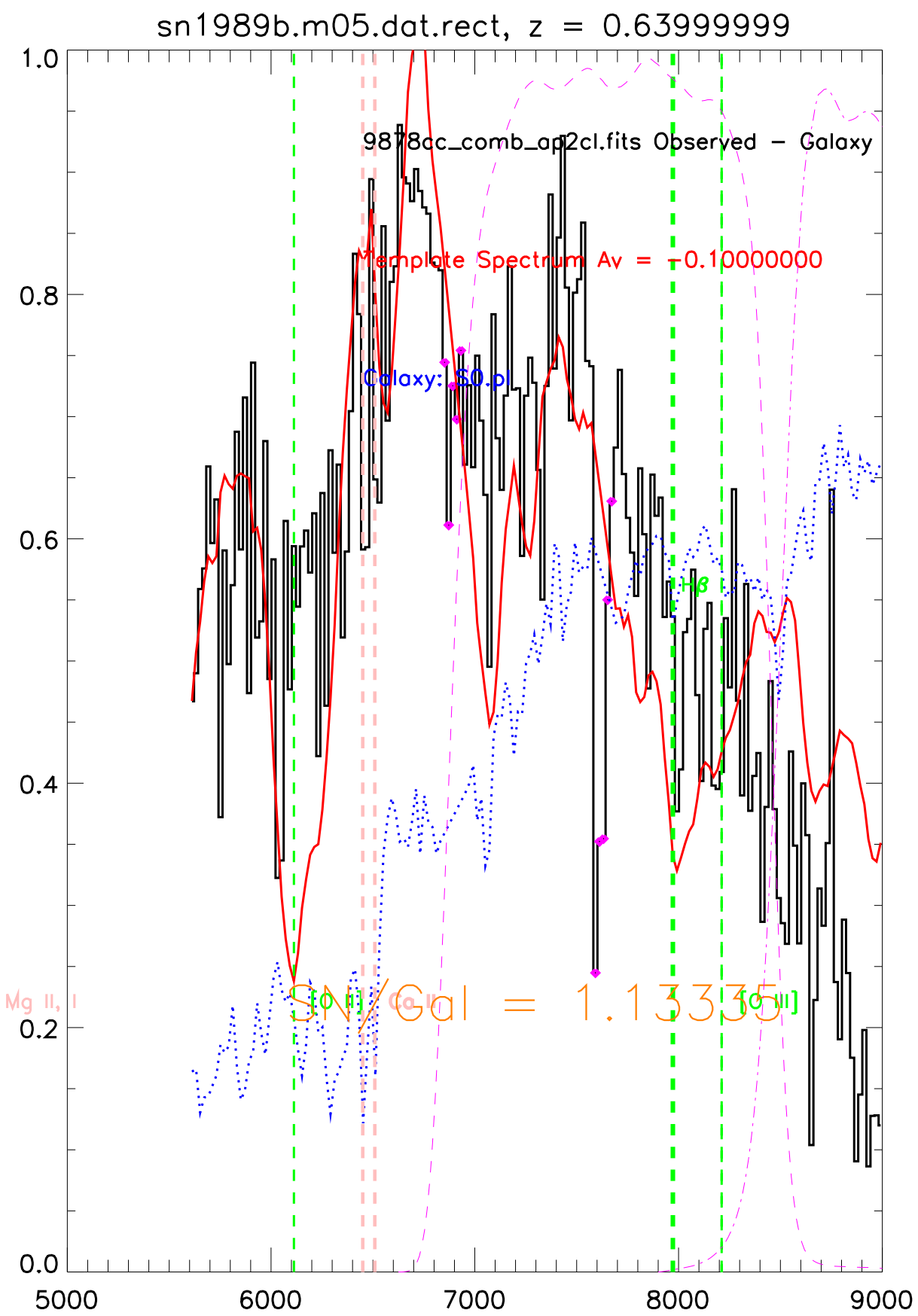

sn1994d.m10.dat.rect, z = 0.45999998
9878cc_comb_ap2cl.fits Observed – G
Template Spectrum Av = 0.10000000
Galaxy: S0.pl
H8
Mg II, I
[O II]
Ca II
SN/Gal
[O III]
0.969990
H
1.0
0.8
0.6
0.4
0.2
0.0
5000
6000
7000
8000
9000

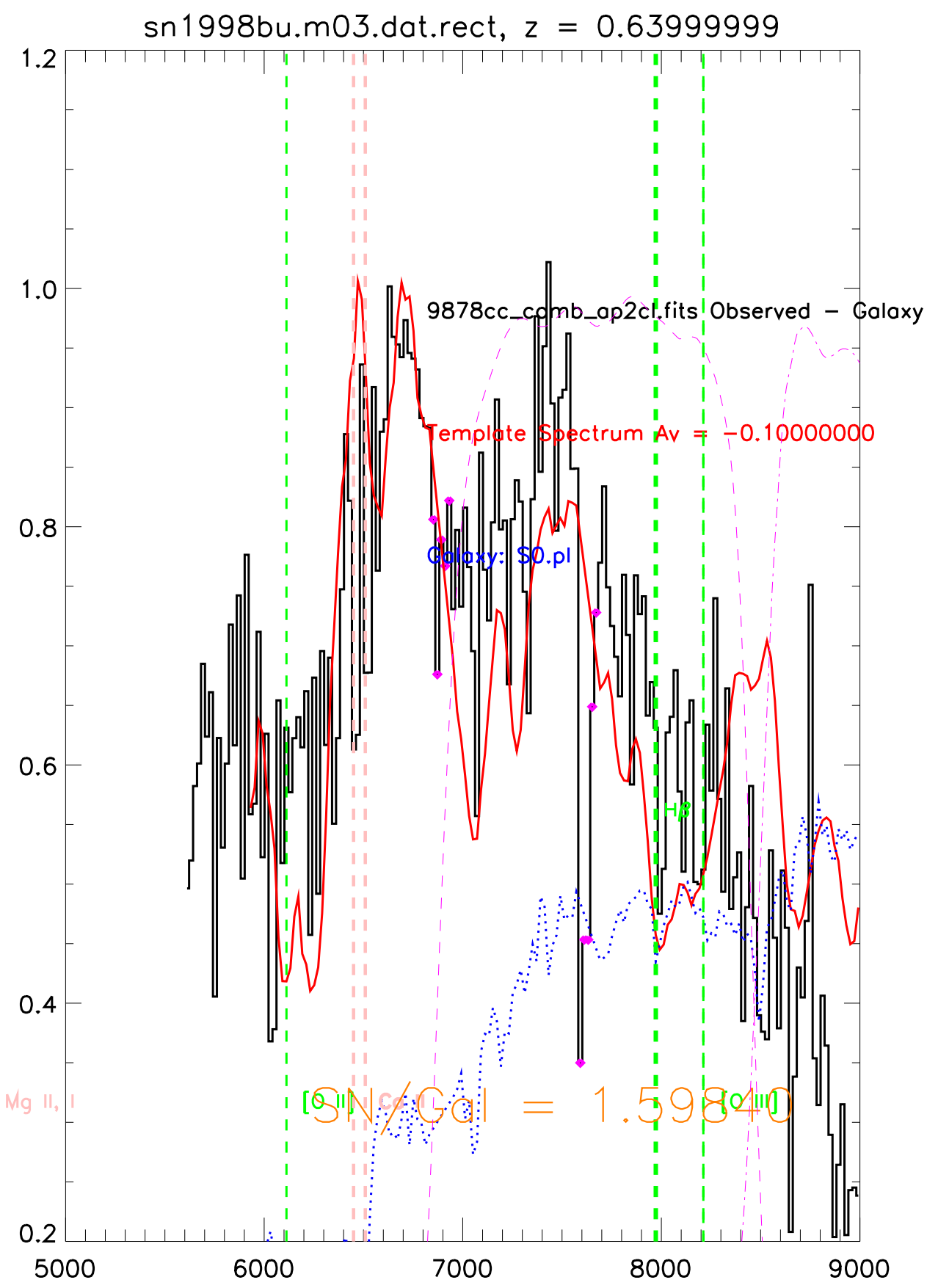

sn1996x.m02.dat.rect, z = 0.63999999
9878cc_comb_dp2cl.fits Observed − Galaxy
Template Spectrum Av = −0.10000000
Galaxy: S0.pl
Hβ
[O II]
Ca II
[O III]
Mg II, I
S/N/Gal = 0.936448
1.0
0.8
0.6
0.4
0.2
0.0
5000
6000
7000
8000
9000

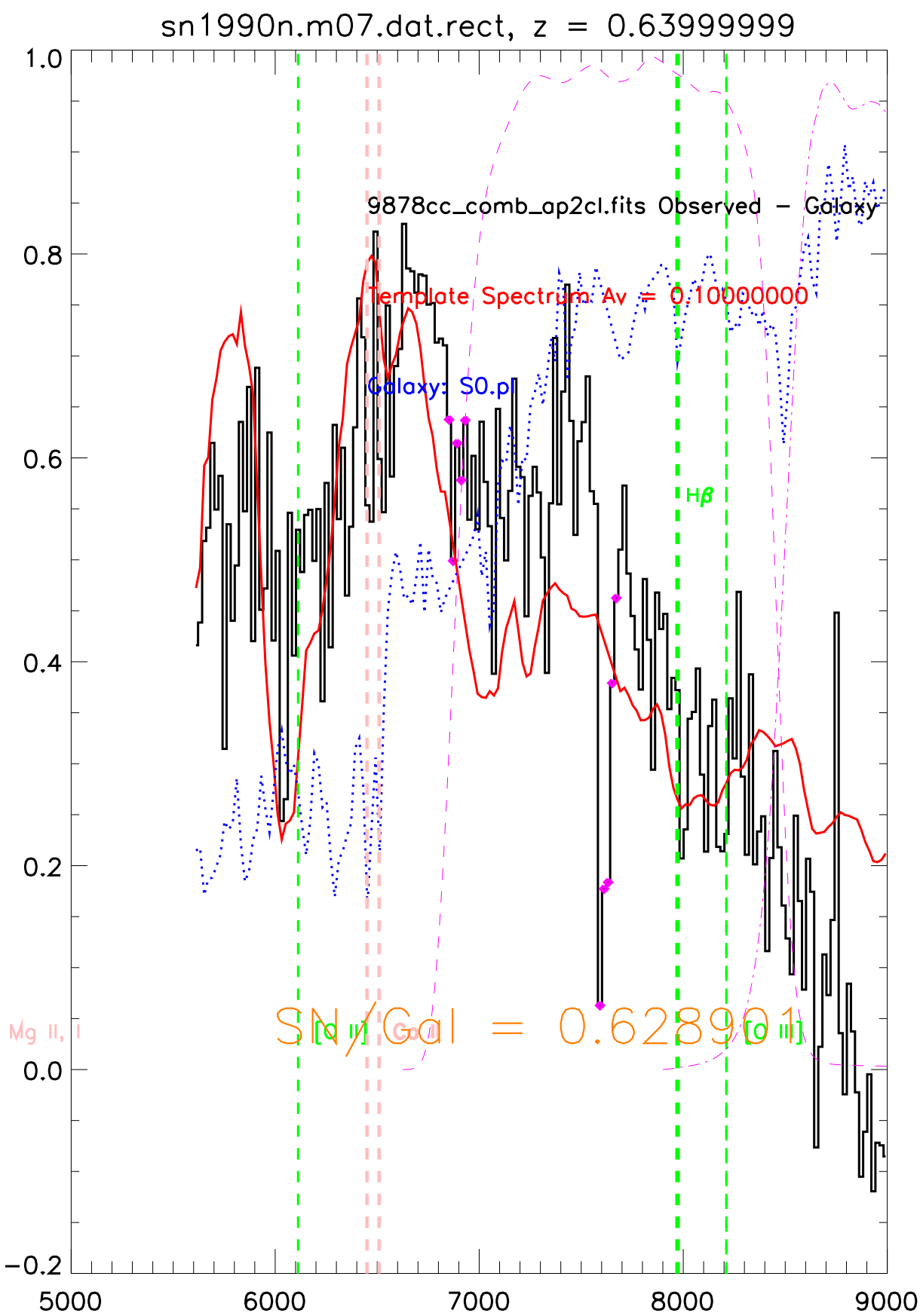

sn1996x.m00.dat.rect, z = 0.63999999
9878cc_comb_ap2cl.fits Observed – Galaxy
Template Spectrum Av = 0.10000000
Galaxy: S0.pl
Hβ
SN/Gal = 0.915998
1.0
0.8
0.6
0.4
0.2
0.0
5000
6000
7000
8000
9000

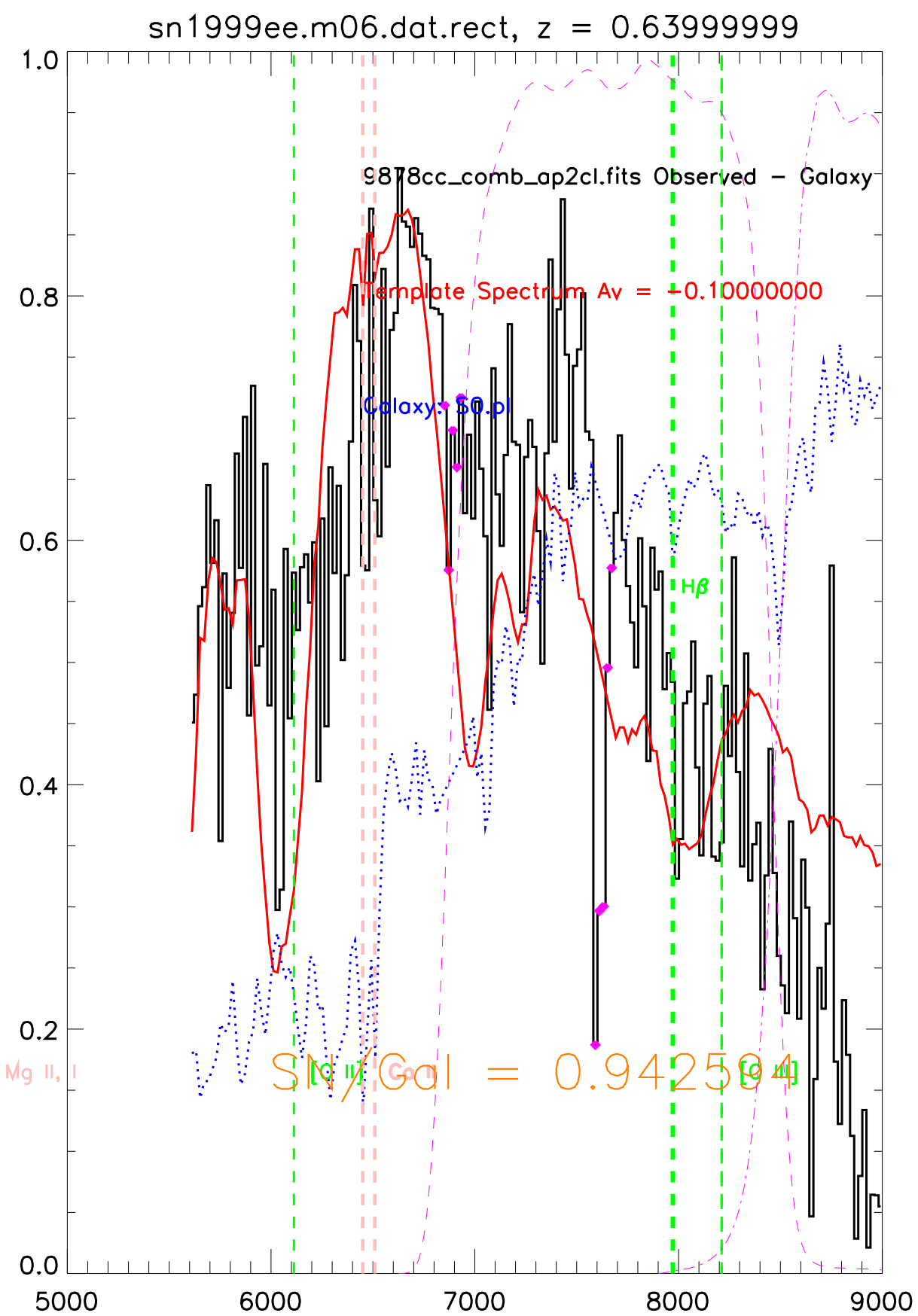

sn1994d.m08.dat.rect, z = 0.63999999
9878cc_comb_ap2cl.fits Observed − Galaxy
Template Spectrum Av = 0.0040816367
Galaxy: S0.pl
Hβ
[O II]
[O III]
Mg II, I
Ca II
SN/Gal = 0.721264
1.0
0.8
0.6
0.4
0.2
0.0
5000
6000
7000
8000
9000

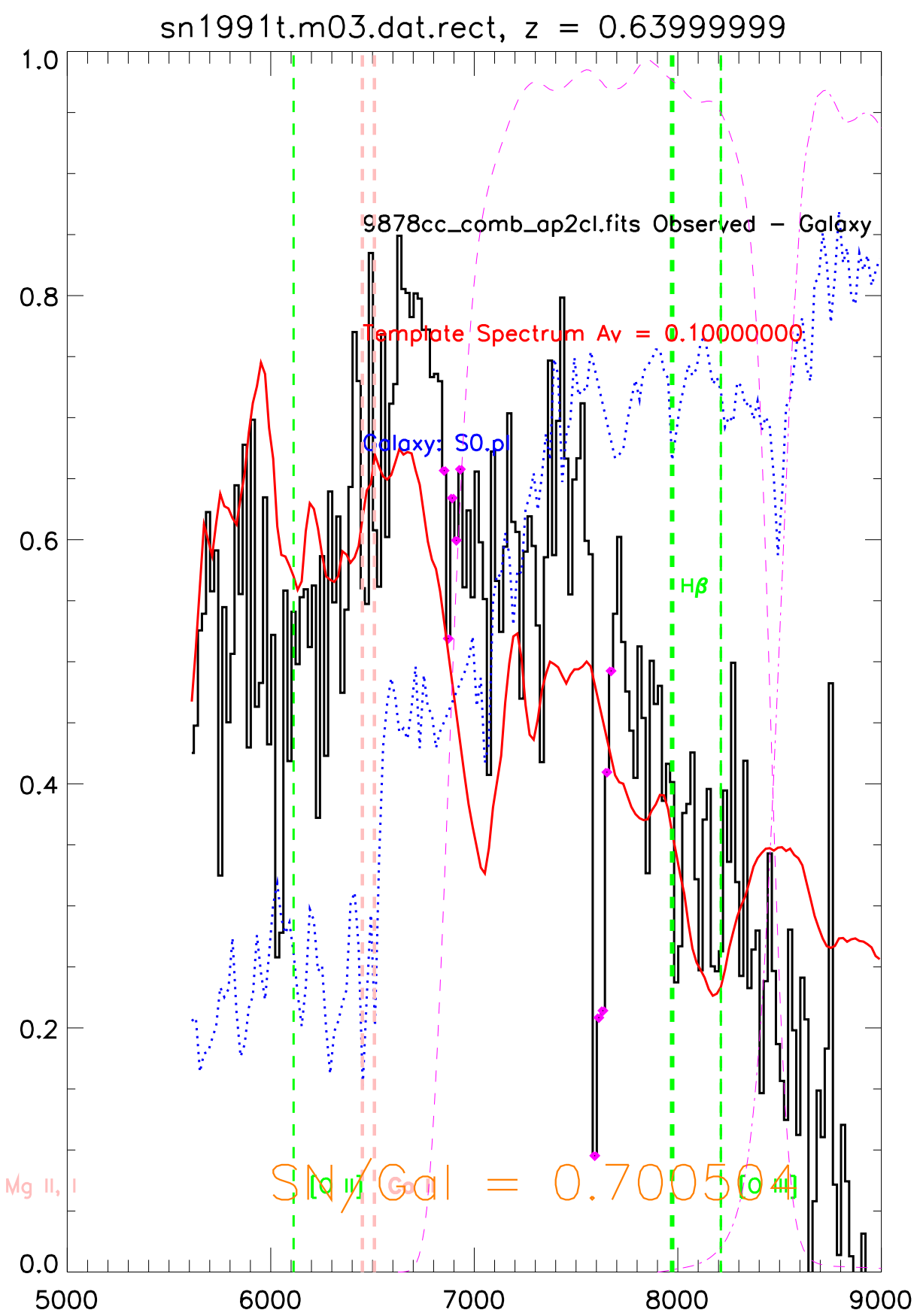

sn1998bu.m04.dat.rect, z = 0.63999999
9878cc_comb_ap2cl.fits Observed − Galaxy
Template Spectrum Av = −0.10000000
Galaxy: S0.pl
Hδ
[O II]
Ca II
[O III]
Mg II,
SN/Gal = 1.23516
1.0
0.8
0.6
0.4
0.2
0.0
5000
6000
7000
8000
9000

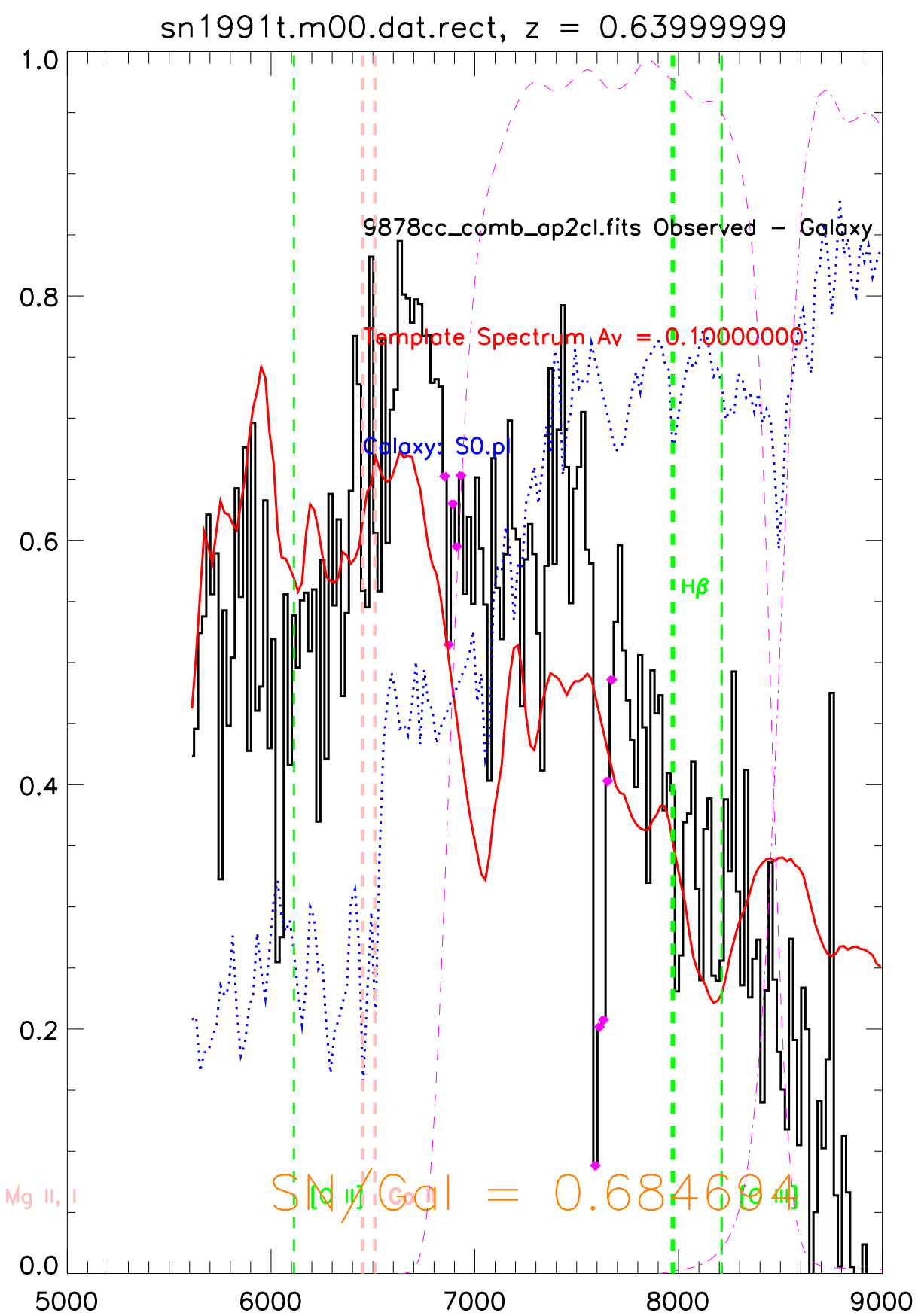

sn1989b.m05.dat.rect, z = 0.63999999
9878cc_comb_ap2cl.fits Observed – Galaxy
Template Spectrum Av = 0.10000000
Galaxy: S0.pl
Hβ
[O II]
Ca II
[O III]
Mg II, I
S/N/Gal = 1.13335
1.0
0.8
0.6
0.4
0.2
0.0
5000
6000
7000
8000
9000

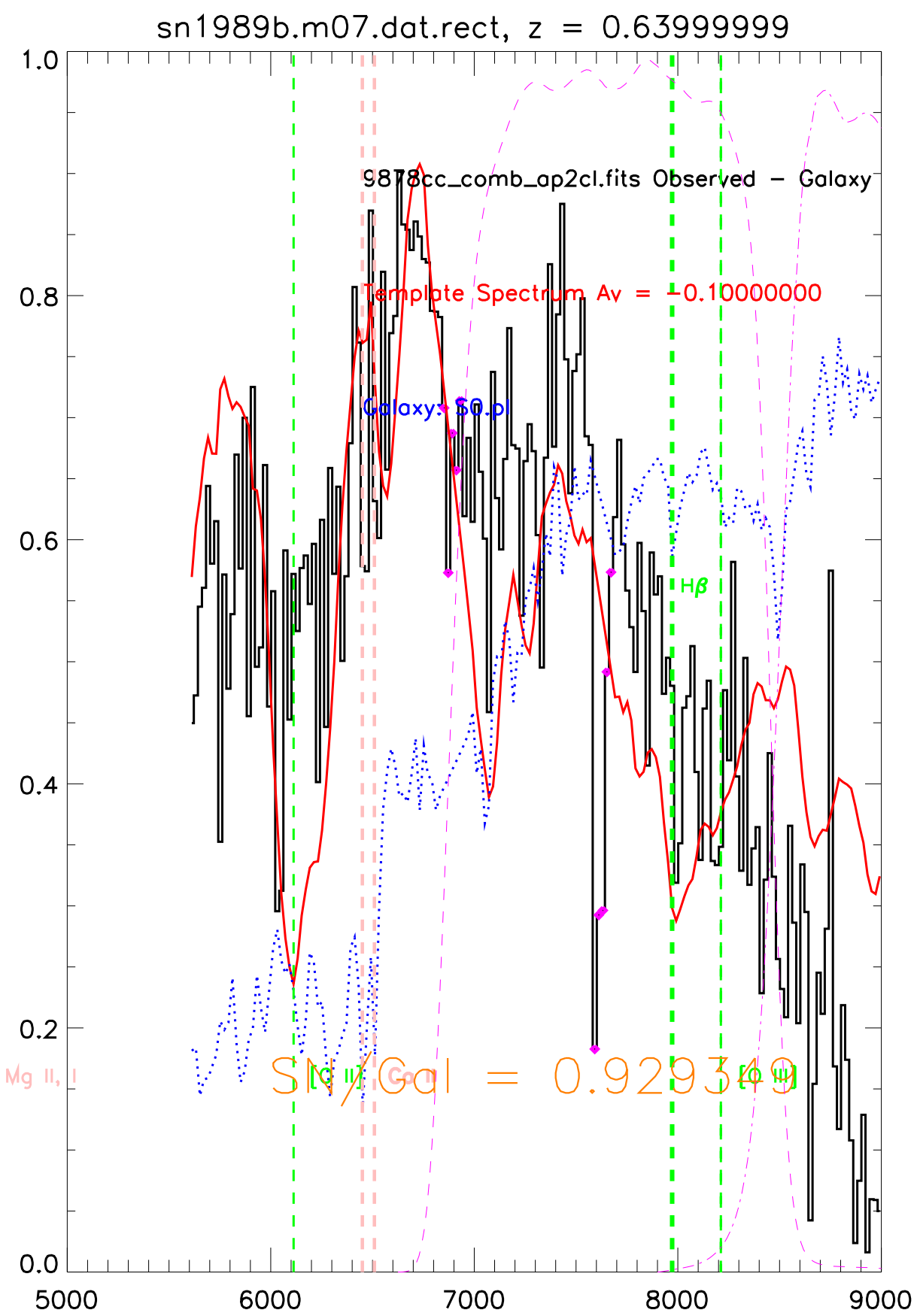

sn1998bu.m03.dat.rect, z = 0.63999999
9878cc_comb_ap2cl.fits Observed − Galaxy
Template Spectrum Av = −0.10000000
Galaxy: S0.pl
Hβ
[O II]
[O III]
Mg II, I
SN/Gal = 1.59840
1.2
1.0
0.8
0.6
0.4
0.2
5000
6000
7000
8000
9000

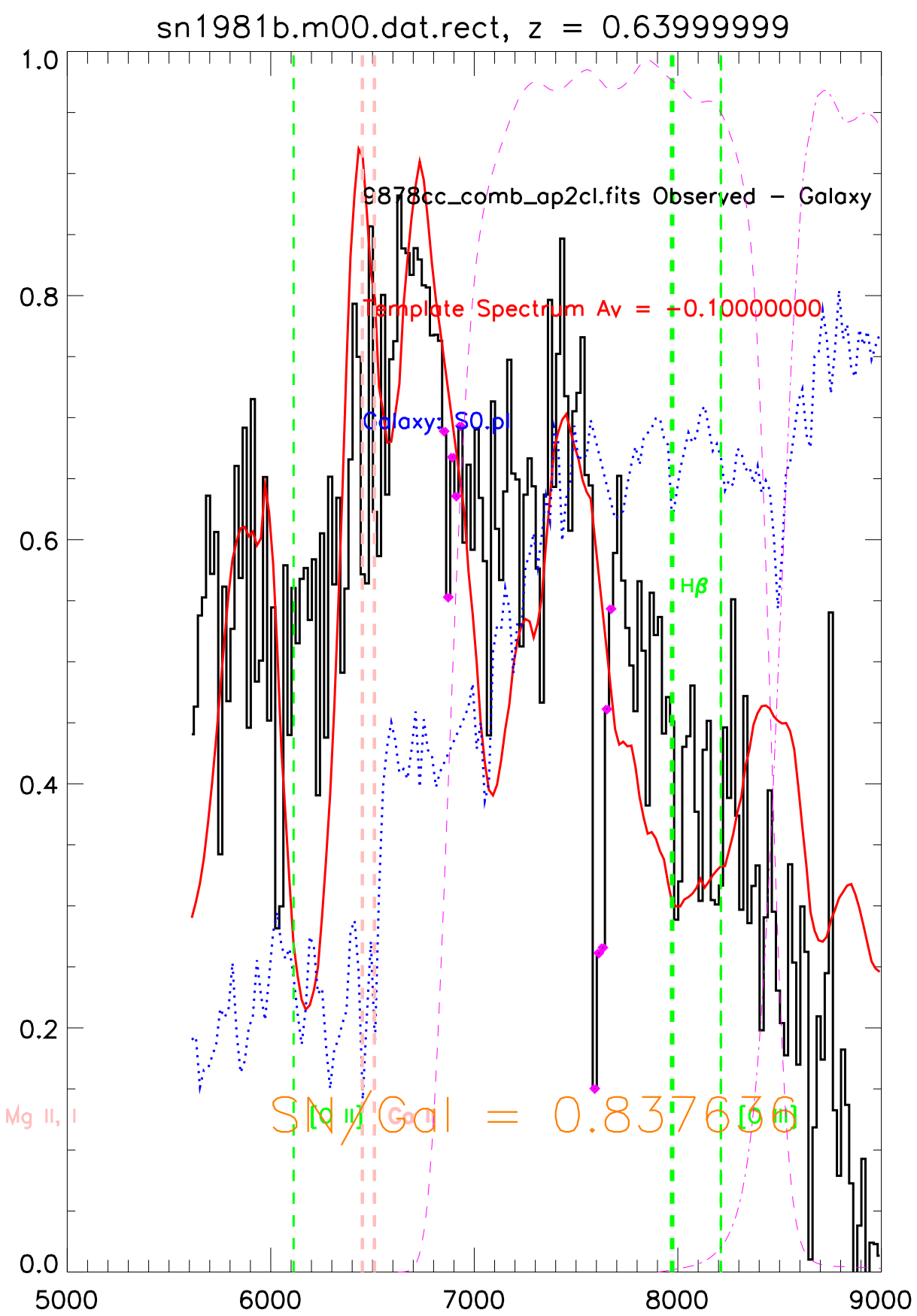

sn1990n.m07.dat.rect, z = 0.63999999
9878cc_comb_ap2cl.fits Observed − Galaxy
Template Spectrum: Av = 0.10000000
Galaxy: S0.pl
Hβ
SN/Gal = 0.628901
Mg II, I
[O II]
Ca II
[O II]
1.0
0.8
0.6
0.4
0.2
0.0
−0.2
5000
6000
7000
8000
9000

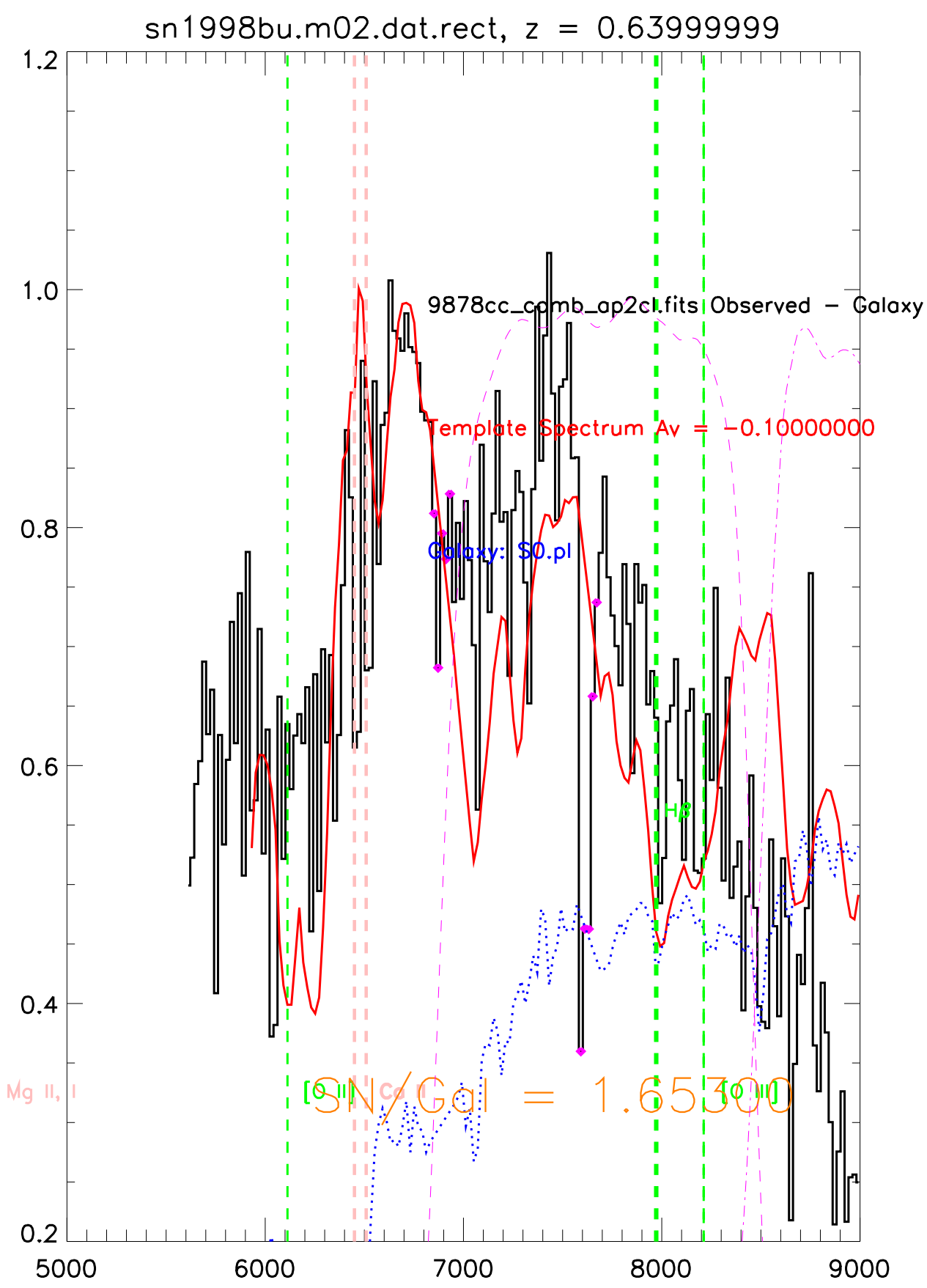

sn1999ee.m06.dat.rect, z = 0.63999999
9878cc_comb_ap2cl.fits Observed − Galaxy
Template Spectrum Av = 0.10000000
Galaxy: S0.pl
Hβ
[O III]
Mg II, I
[O III]
S/N Gal = 0.942594
1.0
0.8
0.6
0.4
0.2
0.0
5000
6000
7000
8000
9000

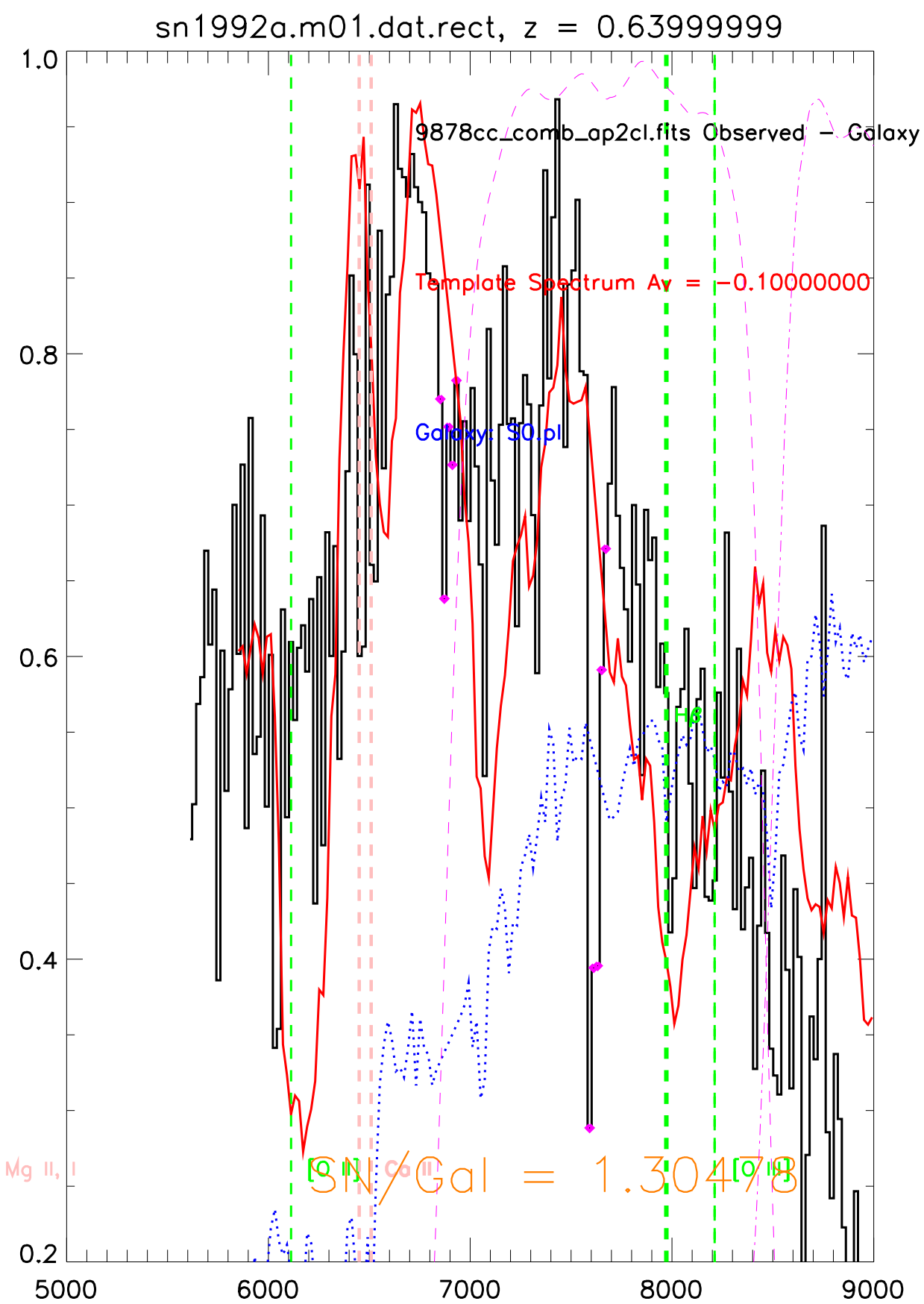

sn1991t.m03.dat.rect, z = 0.63999999
9878cc_comb_ap2cl.fits Observed − Galaxy
Template Spectrum Av = 0.10000000
Galaxy: S0.pl
Hβ
SN/Gal = 0.700504
Mg II, I
[O II]
Ca I
[O III]
1.0
0.8
0.6
0.4
0.2
0.0
5000
6000
7000
8000
9000

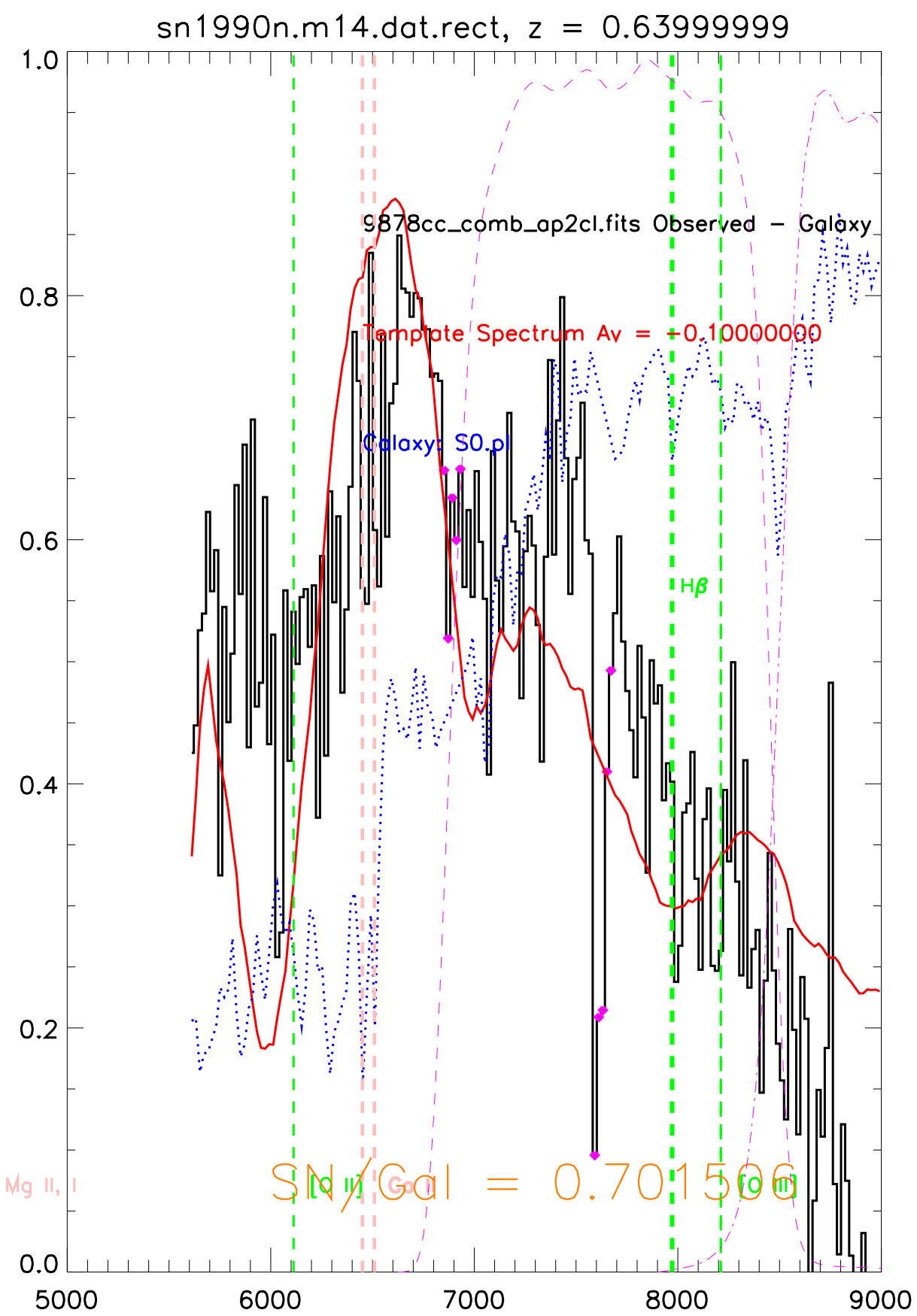

sn1991t.m00.dat.rect, z = 0.63999999
9878cc_comb_ap2cl.fits Observed − Galaxy
Template Spectrum Av = 0.10000000
Galaxy: S0.pl
Hβ
SN/Gal = 0.684694
Mg II, I
1.0
0.8
0.6
0.4
0.2
0.0
5000
6000
7000
8000
9000

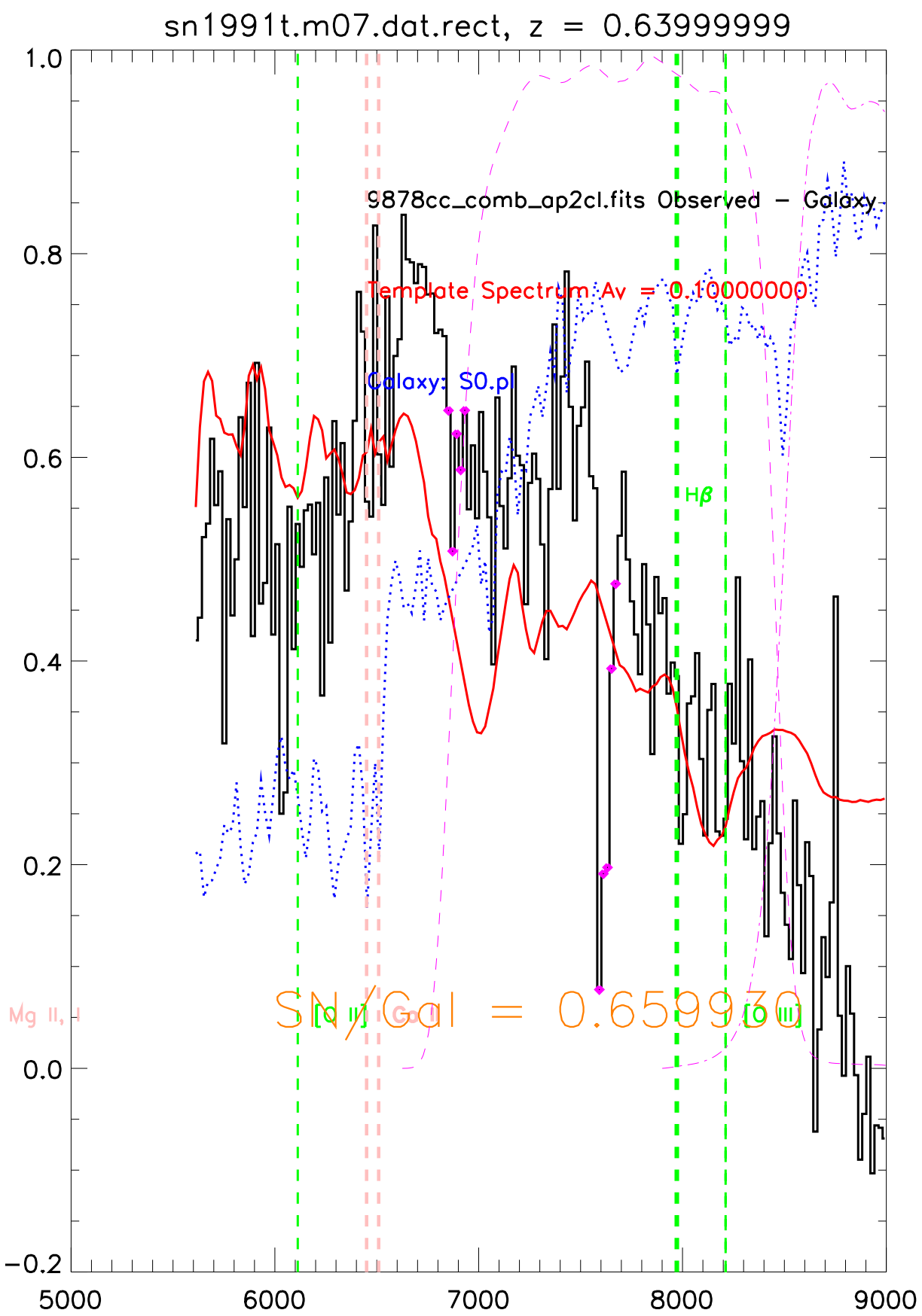

sn1989b.m07.dat.rect, z = 0.63999999
9878cc_comb_ap2cl.fits Observed − Galaxy
Template Spectrum Av = −0.10000000
Galaxy: S0.pl
Hβ
S/N Gal = 0.929349
Mg II, I
[O III]
[O III]
1.0
0.8
0.6
0.4
0.2
0.0
5000
6000
7000
8000
9000

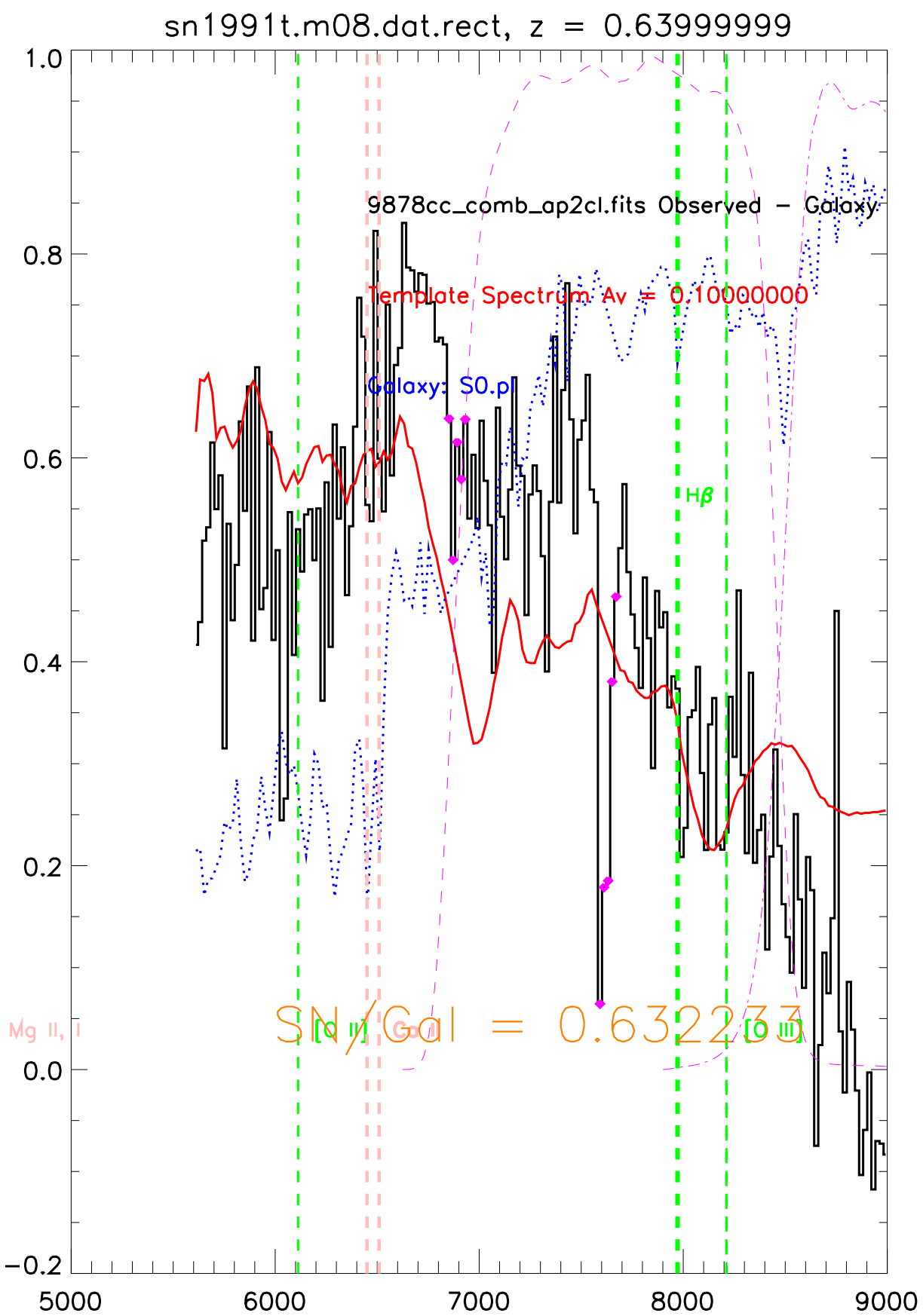

sn1981b.m00.dat.rect, z = 0.63999999
1.0
0.8
0.6
0.4
0.2
0.0
5000
6000
7000
8000
9000
9878cc_comb_ap2cl.fits Observed − Galaxy
Template Spectrum Av = 0.10000000
Galaxy: S0.pl
Hβ
Mg II, I
[O II]
Ca II
[O III]
S/N Gal = 0.837636

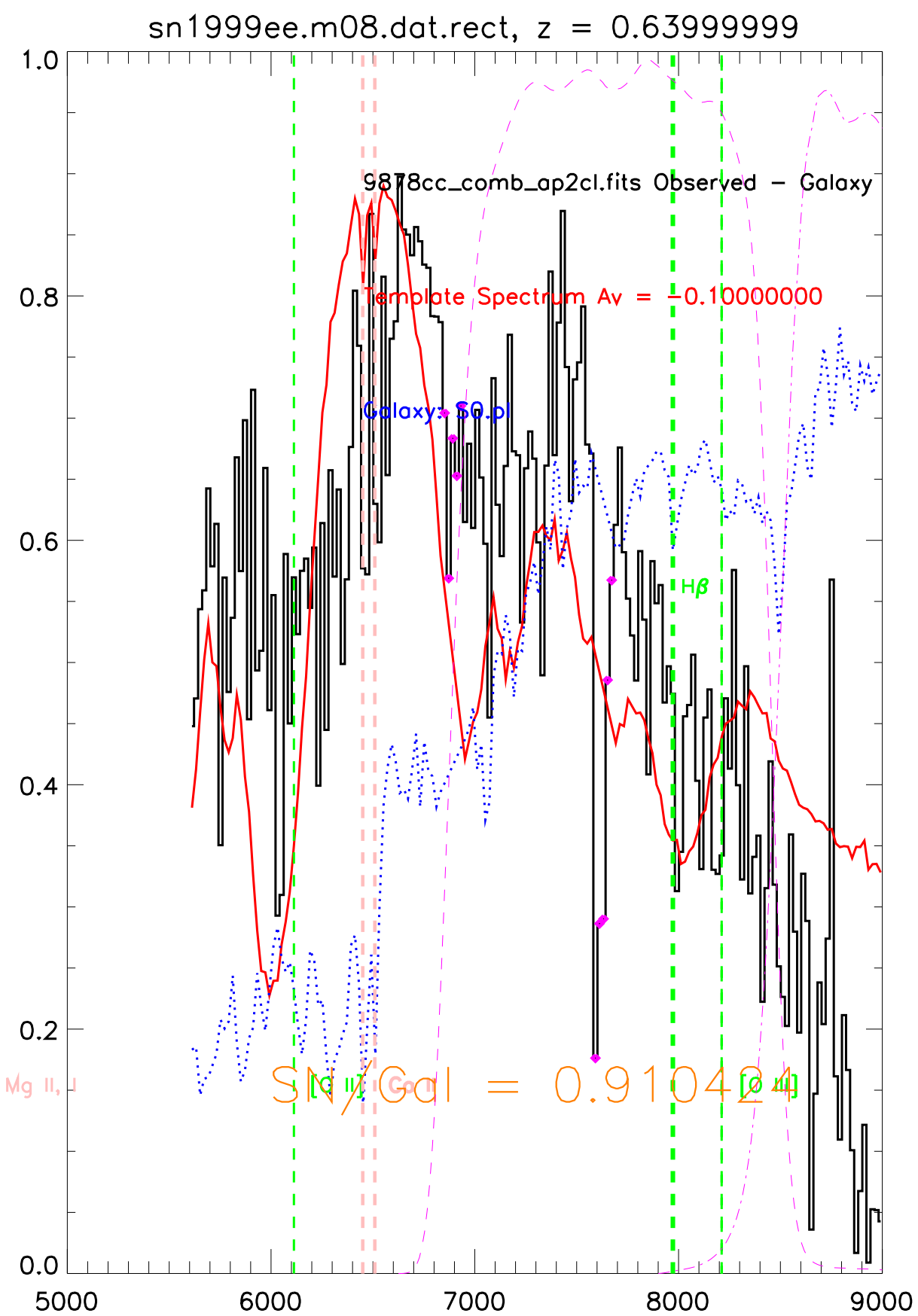

sn1998bu.m02.dat.rect, z = 0.63999999
9878cc_comb_ap2cl.fits Observed − Galaxy
Template Spectrum Av = −0.10000000
Galaxy: S0.pl
Hβ
[O II]
Ca II
[O III]
Mg II, I
SN/Gal = 1.65300
1.2
1.0
0.8
0.6
0.4
0.2
5000
6000
7000
8000
9000


sn1992a.m01.dat.rect, z = 0.63999999
9878cc_comb_ap2cl.fits Observed – Galaxy
Template Spectrum Av = −0.10000000
Galaxy: S0.pl
Hβ
[O II]
Ca II
[O III]
Mg II, I
SN/Gal = 1.30478
1.0
0.8
0.6
0.4
0.2
5000
6000
7000
8000
9000

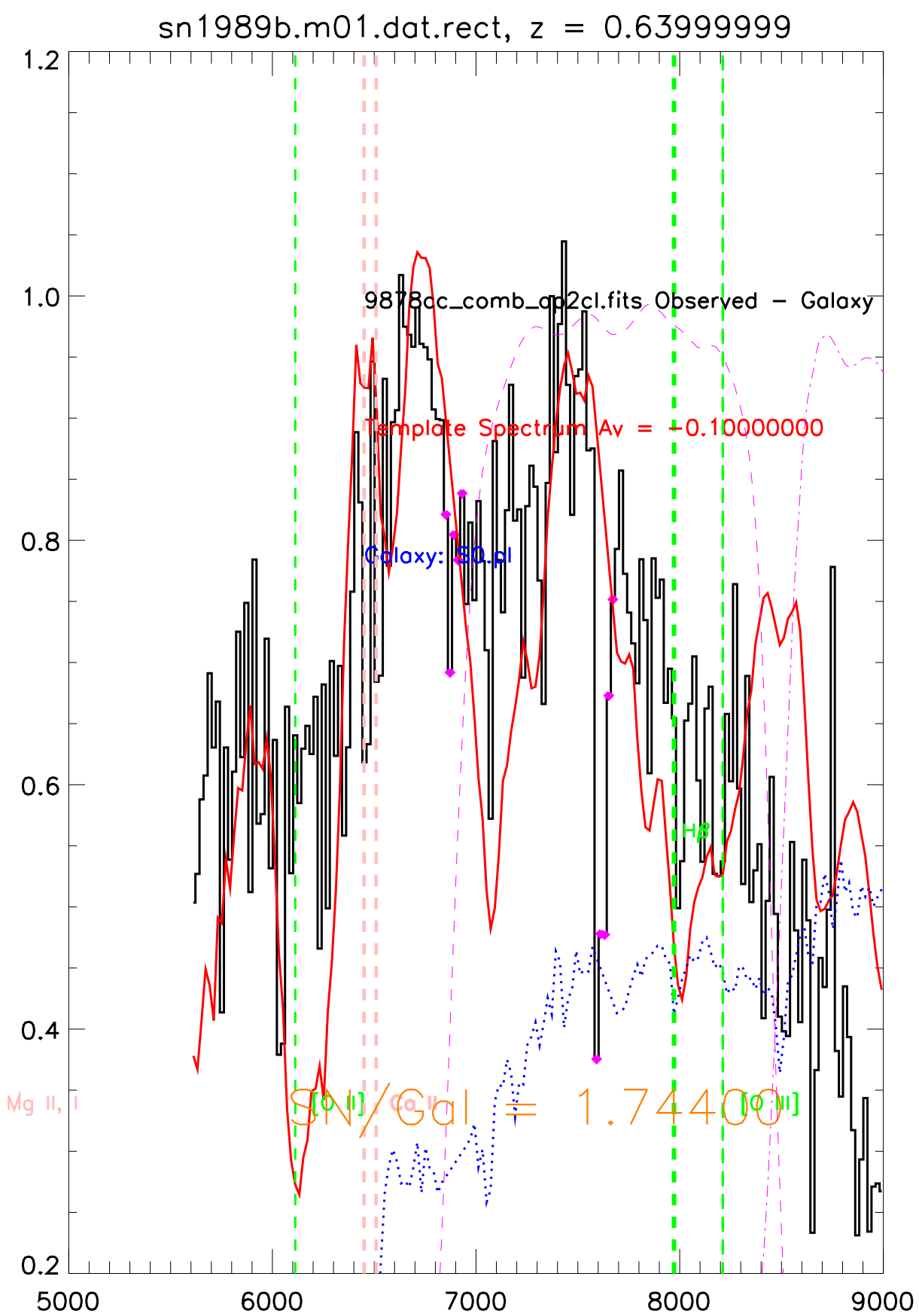

sn1990n.m14.dat.rect, z = 0.63999999
9878cc_comb_ap2cl.fits Observed − Galaxy
Template Spectrum Av = 0.10000000
Galaxy: S0.pl
Hβ
Mg II, I
[O II]
Ca I
[O III]
S/N/Gal = 0.701506
1.0
0.8
0.6
0.4
0.2
0.0
5000
6000
7000
8000
9000


sn1991t.m07.dat.rect, z = 0.63999999
9878cc_comb_ap2cl.fits Observed − Galaxy
Template Spectrum Av = 0.10000000
Galaxy: S0.pl
Hβ
SN/Gal = 0.659930
Mg II, I
[O II]
Ca I
[O III]
1.0
0.8
0.6
0.4
0.2
0.0
−0.2
5000
6000
7000
8000
9000


sn1991t.m08.dat.rect, z = 0.63999999
9878cc_comb_ap2cl.fits Observed − Galaxy
Template Spectrum Av = 0.10000000
Galaxy: S0.pl
Hβ
SN/Gal = 0.632233
Mg II, I
[O II]
Ca I
[O III]
1.0
0.8
0.6
0.4
0.2
0.0
−0.2
5000
6000
7000
8000
9000



sn1999ee.m08.dat.rect, z = 0.63999999
9878cc_comb_ap2cl.fits Observed - Galaxy
Template Spectrum Av = -0.10000000
Galaxy: S0.pl
Hβ
Mg II, I
[O II]
Ca II
[O III]
SN/Gal = 0.910424
1.0
0.8
0.6
0.4
0.2
0.0
5000
6000
7000
8000
9000


sn1989b.m01.dat.rect, z = 0.63999999
9878cc_comb_qp2cl.fits Observed − Galaxy
Template Spectrum Av = 0.10000000
Galaxy: S0.pl
Hβ
Mg II, I
[O II]
Ca II
[O III]
S/N/Gal = 1.74400
1.2
1.0
0.8
0.6
0.4
0.2
5000
6000
7000
8000
9000