Spectral line identifation for Echelle spectra of YFOSC at Lijiang 2.4m telescope

Created by Jujia Zhang
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Tips: the continuum of FeAr lamb is very weak, you can extract it via the spectra of star (1. Combine the image of lamb's and star's spectra and then extract them together. 2. Minus the spectra of star from the combined spectra.)

FeAr lamb is suggested for the wavelength calibraiton, esp., at the blue part, since the line of Helium+Neon is rare at the this part.

For G10+E9 model, the explosion time of FeAr lamb is about 600s and that of HeNe is about 120s.

The identication of FeAr and HeNe of G10+E9+slit0.8 of YFOSC are encloused.

Spectral line identificaiton of FeAr lamb for YFOSC Echelle model of LiJiang 2.4m telescope In the case of G10+E9+slit0.8*5.4

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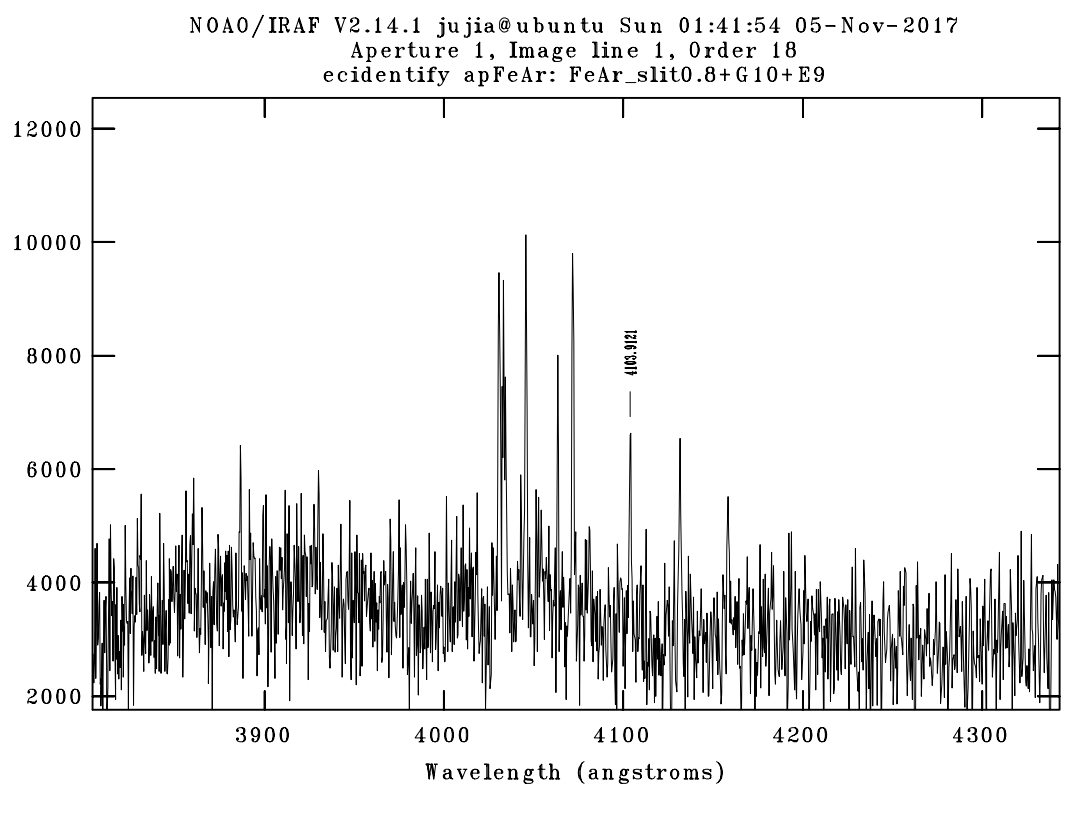
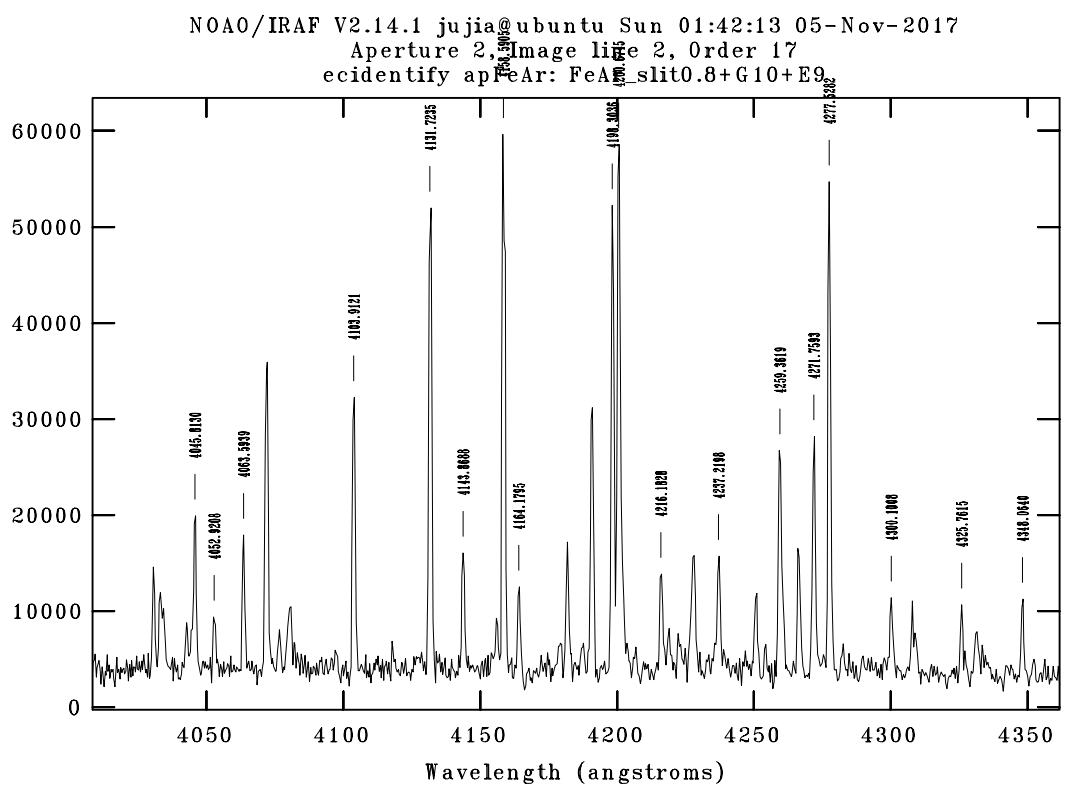
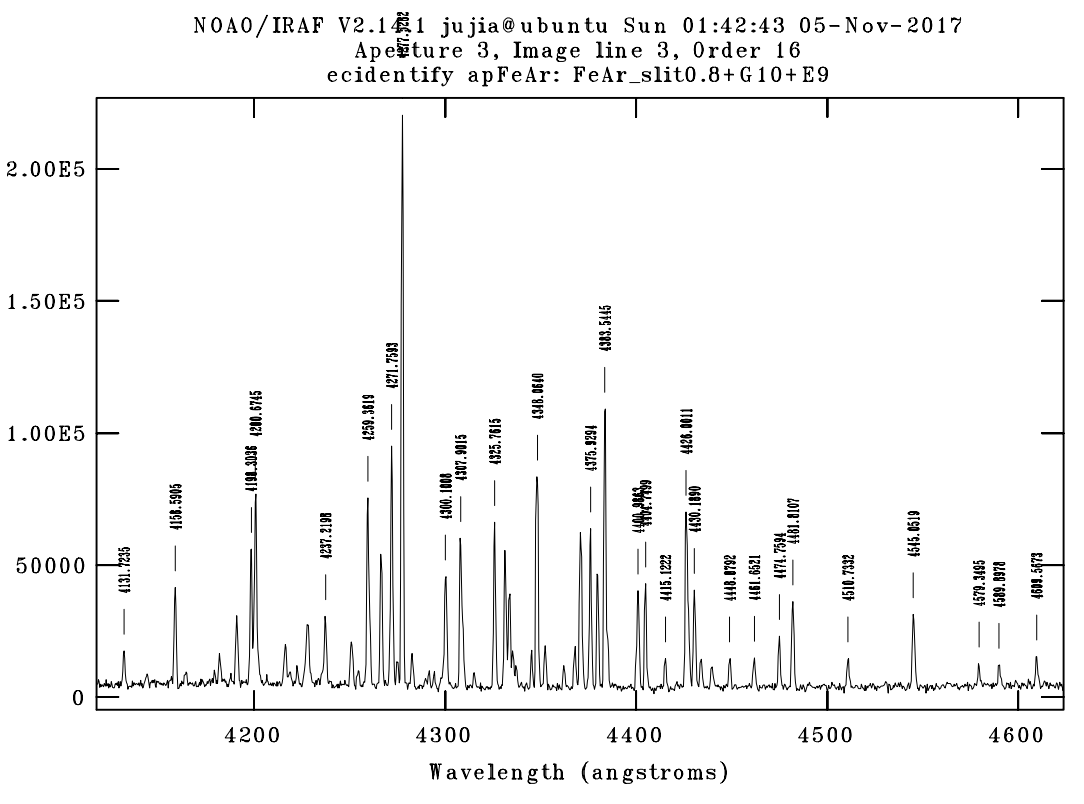
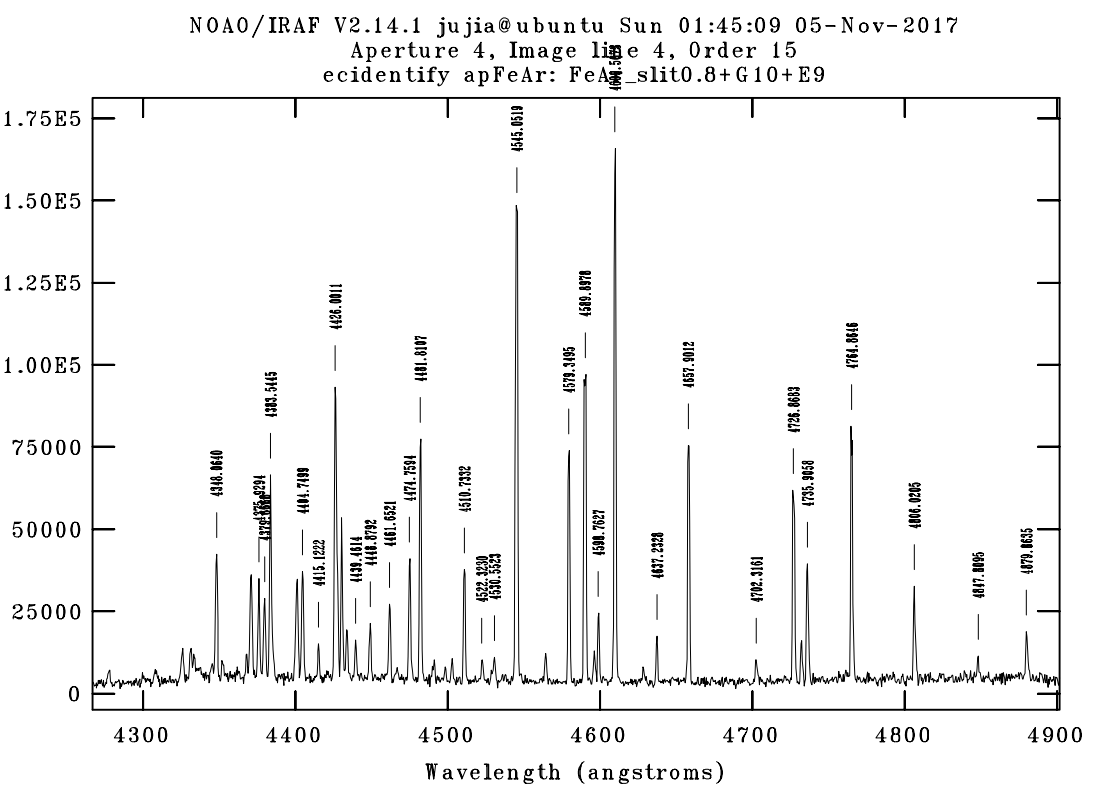
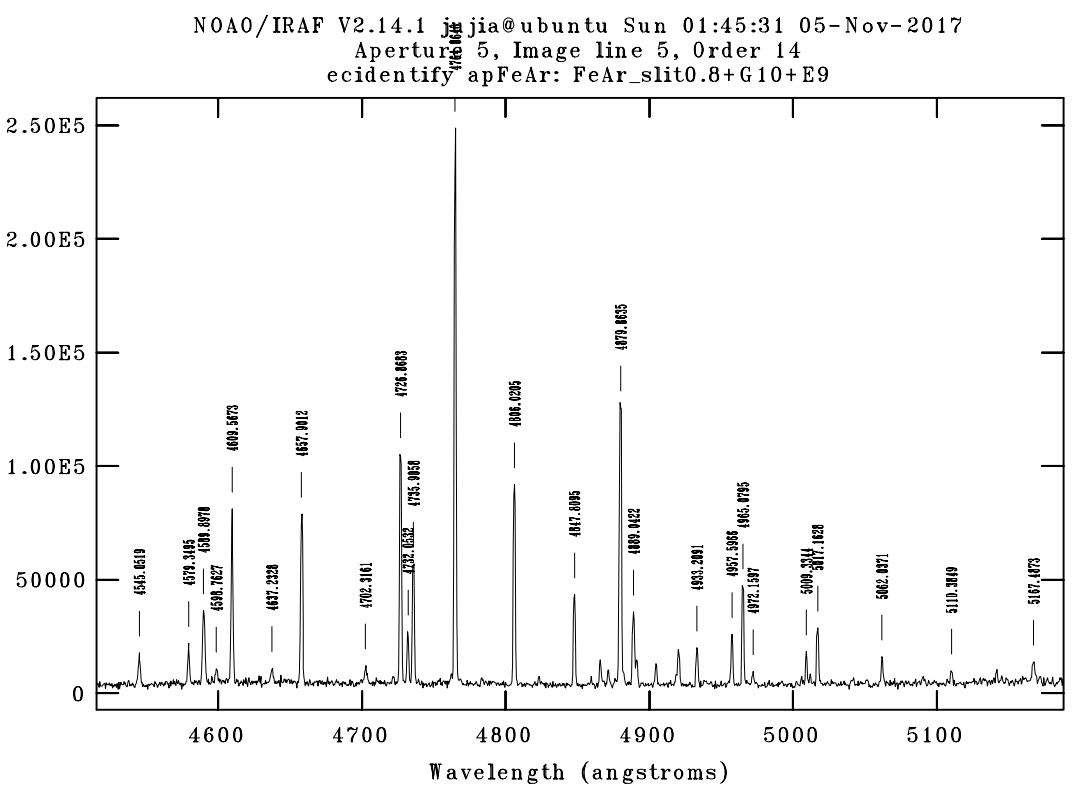
Noted: the spectra of each order are zoomed vertically and horizontally for better display.

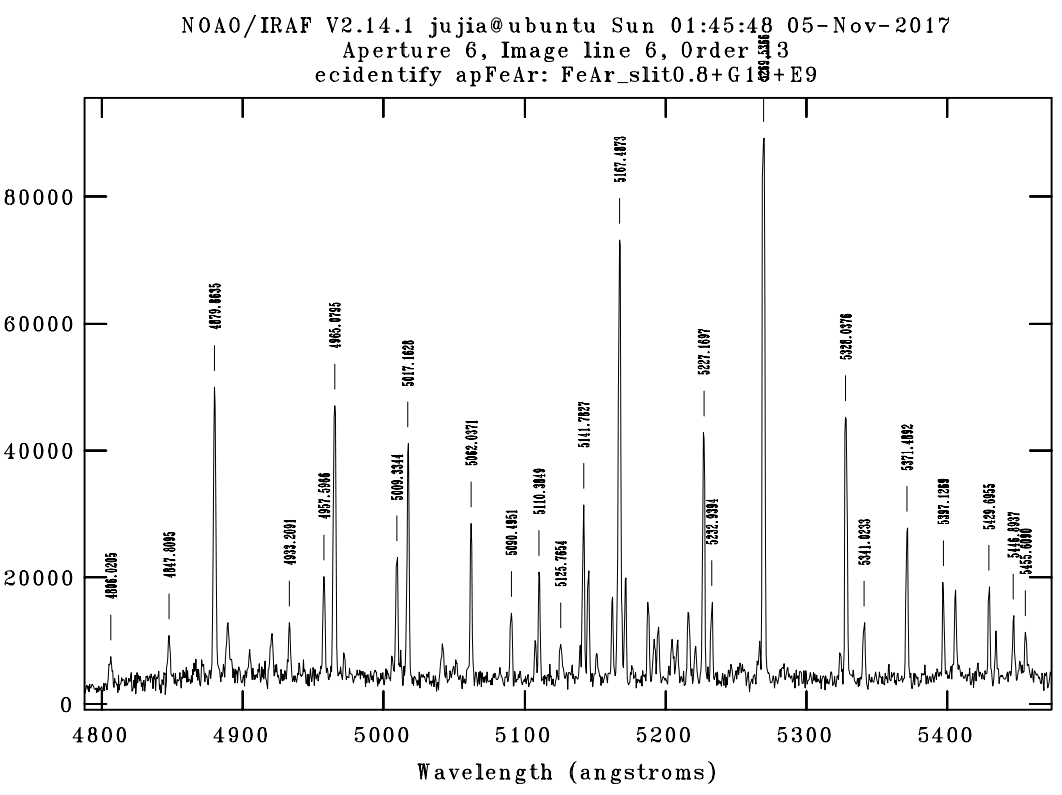

NOAO/IRAF V2.14.1 jujia@ubuntu Sun 01:41:54 05-Nov-2017
Aperture 1, Image line 1, Order 18
ecidentify apFeAr: FeAr_slit0.8+G10+E9
12000
10000
8000
6000
4000
2000
4103.9121
3900
4000
4100
4200
4300
Wavelength (angstroms)


NOAO/IRAF V2.14.1 jujia@ubuntu Sun 01:42:13 05-Nov-2017
Aperture 2, Image line 2, Order 17
ecidentify apFeAr: FeAr_slit0.8+G10+E9
4045.8130
4052.9206
4063.5939
4103.9121
4131.7235
4135.8668
4158.5908
4164.1795
4190.7115
4198.3085
4216.1820
4237.2186
4250.3619
4271.7593
4277.5282
4300.1008
4325.7615
4348.0640
60000
50000
40000
30000
20000
10000
0
4050
4100
4150
4200
4250
4300
4350
Wavelength (angstroms)


NOAO/IRAF V2.14.1 jujia@ubuntu Sun 01:42:43 05-Nov-2017
Aperture 3, Image line 3, Order 16
ecidentify apFeAr: FeAr_slit0.8+G10+E9
2.00E5
1.50E5
1.00E5
50000
0
4200
4300
4400
4500
4600
Wavelength (angstroms)
4131.7235
4158.5905
4190.3036
4200.6745
4237.2198
4259.3619
4271.7593
4300.1008
4307.9015
4325.7615
4348.0610
4375.9294
4383.5445
4426.0011
4430.1890
4448.8792
4461.6521
4471.7694
4481.8107
4510.7332
4545.0519
4579.3495
4589.8978
4609.5673


NOAO/IRAF V2.14.1 jujia@ubuntu Sun 01:45:09 05-Nov-2017
Aperture 4, Image line 4, Order 15
ecidentify apFeAr: FeAr_slit0.8+G10+E9
1.75E5
1.50E5
1.25E5
1.00E5
75000
50000
25000
0
4300
4400
4500
4600
4700
4800
4900
Wavelength (angstroms)
4348.0660
4383.5445
4426.0011
4481.8107
4545.0519
4579.3495
4589.8978
4657.9012
4726.8683
4735.9058
4764.8646
4806.0295
4847.8095
4879.8635
4707.3161
4637.2328
4508.7627
4530.5523
4532.3230
4471.7594
4461.6521
4448.8792
4439.4614
4415.1222
4404.7499
4385.6294
4383.5445


NOAO/IRAF V2.14.1 jj jia@ubuntu Sun 01:45:31 05-Nov-2017
Aperture 5, Image line 5, Order 14
ecidentify apFeAr: FeAr_slit0.8+G10+E9
2.50E5
2.00E5
1.50E5
1.00E5
50000
0
4600
4700
4800
4900
5000
5100
Wavelength (angstroms)
4545.0519
4579.3195
4589.8978
4598.7627
4609.5673
4637.2328
4657.9012
4702.3161
4726.8683
4732.0532
4735.9058
4806.0205
4847.8095
4879.8635
4889.0422
4933.2061
4957.5986
4965.0795
4972.1597
5009.2114
5017.1628
5062.0371
5110.3849
5167.4473


NOAO/IRAF V2.14.1 jujia@ubuntu Sun 01:45:48 05-Nov-2017
Aperture 6, Image line 6, Order 3
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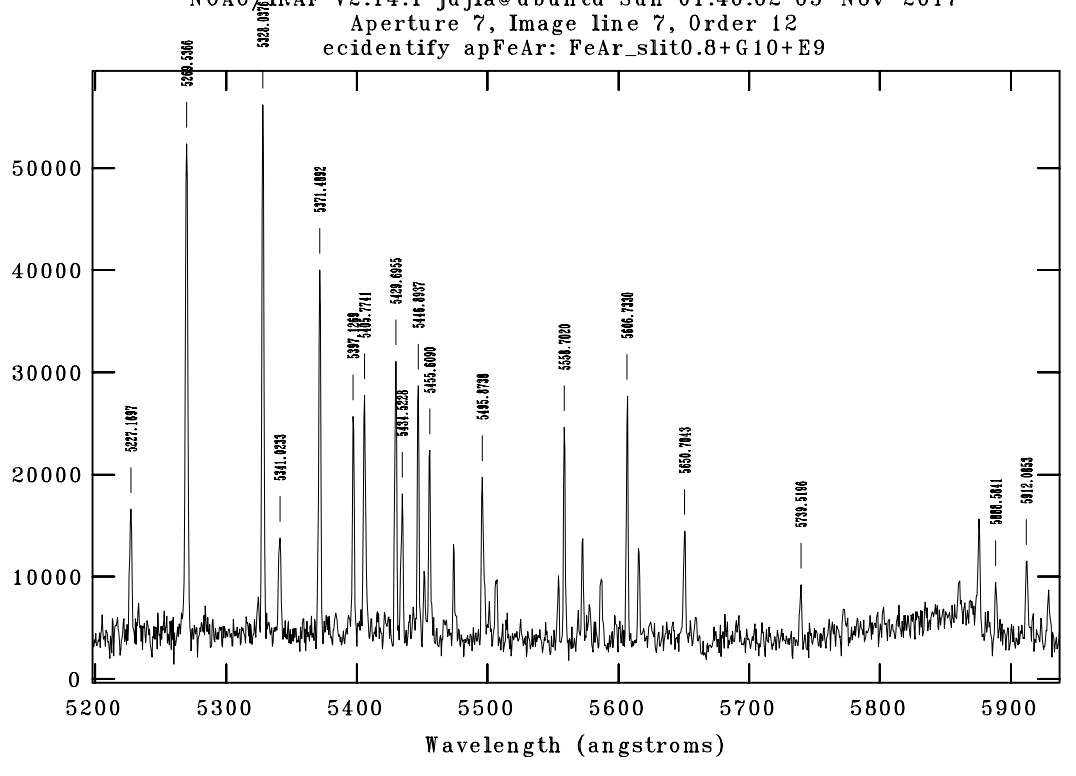
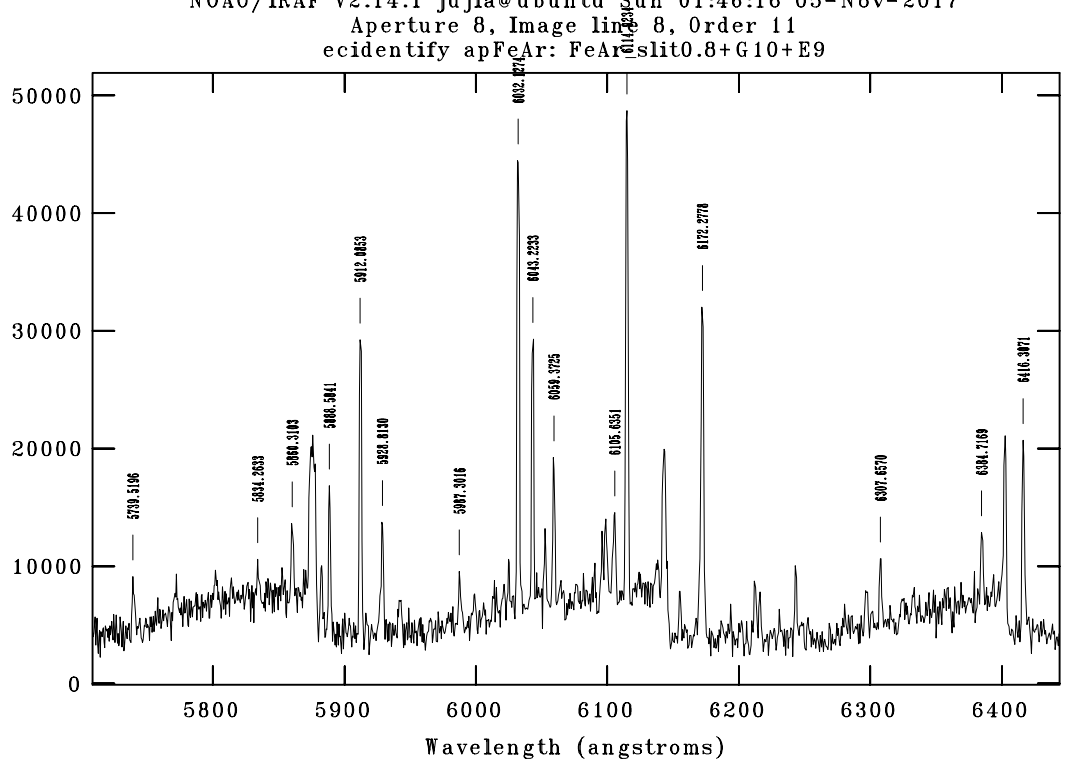
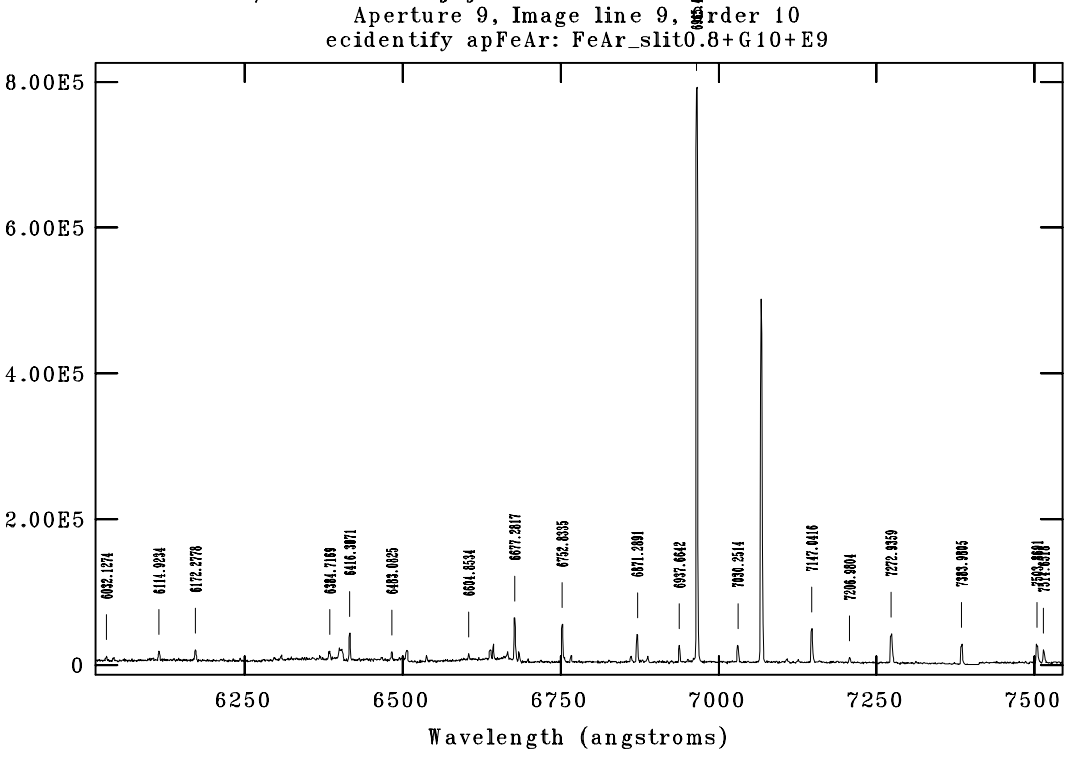
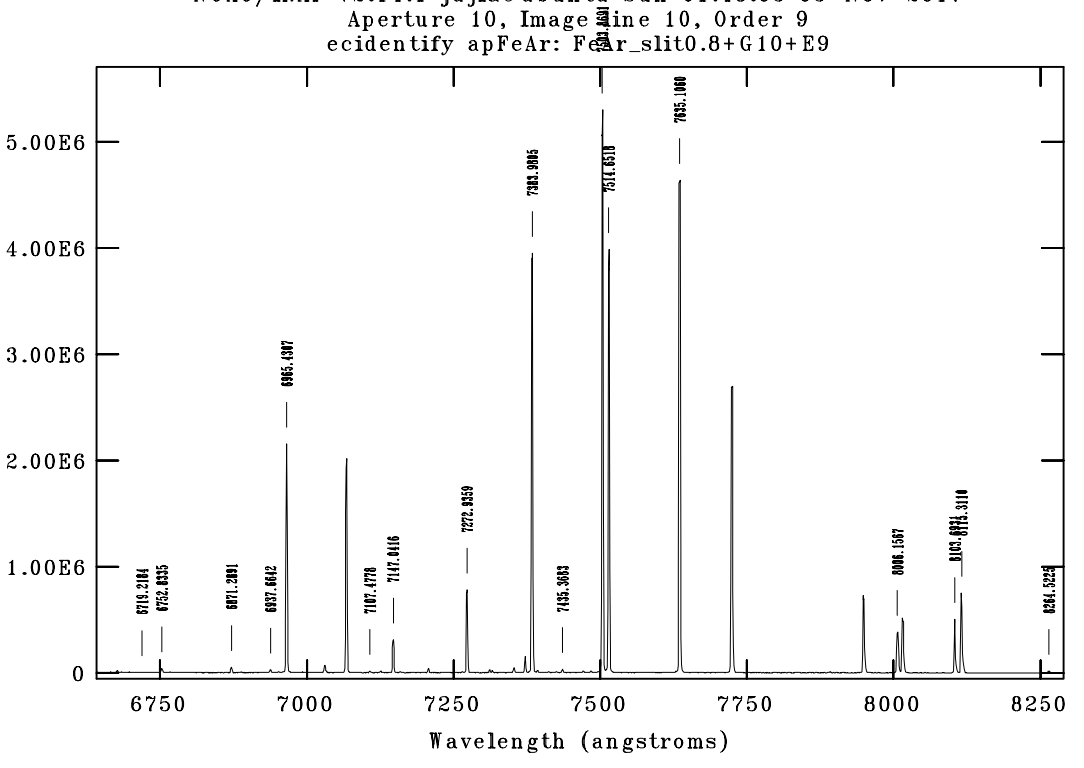
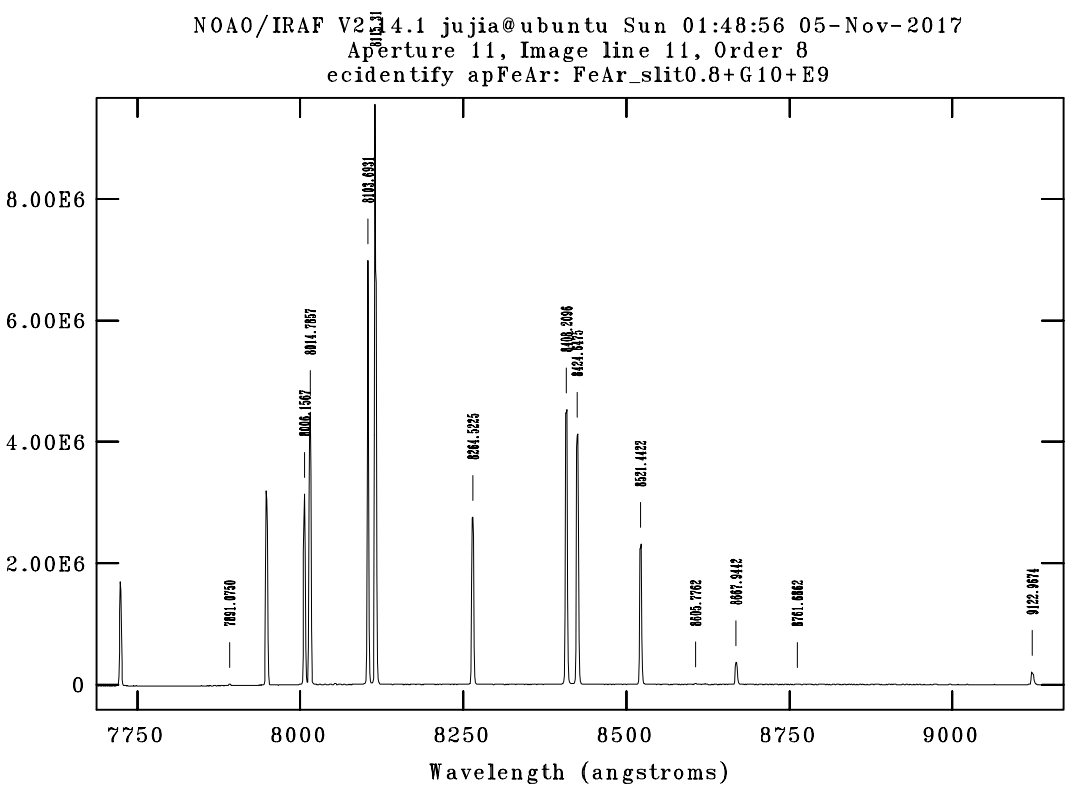
4806.0205
4847.8095
4879.8635
4933.2091
4957.5946
4965.8795
5009.3344
5017.1628
5062.0371
5090.1951
5110.3819
5125.7664
5141.7827
5167.1873
5221.1697
5232.9394
5328.0376
5341.0233
5371.4892
5397.1289
5429.6955
5445.0037
5455.6080
0
20000
40000
60000
80000
4800
4900
5000
5100
5200
5300
5400
Wavelength (angstroms)

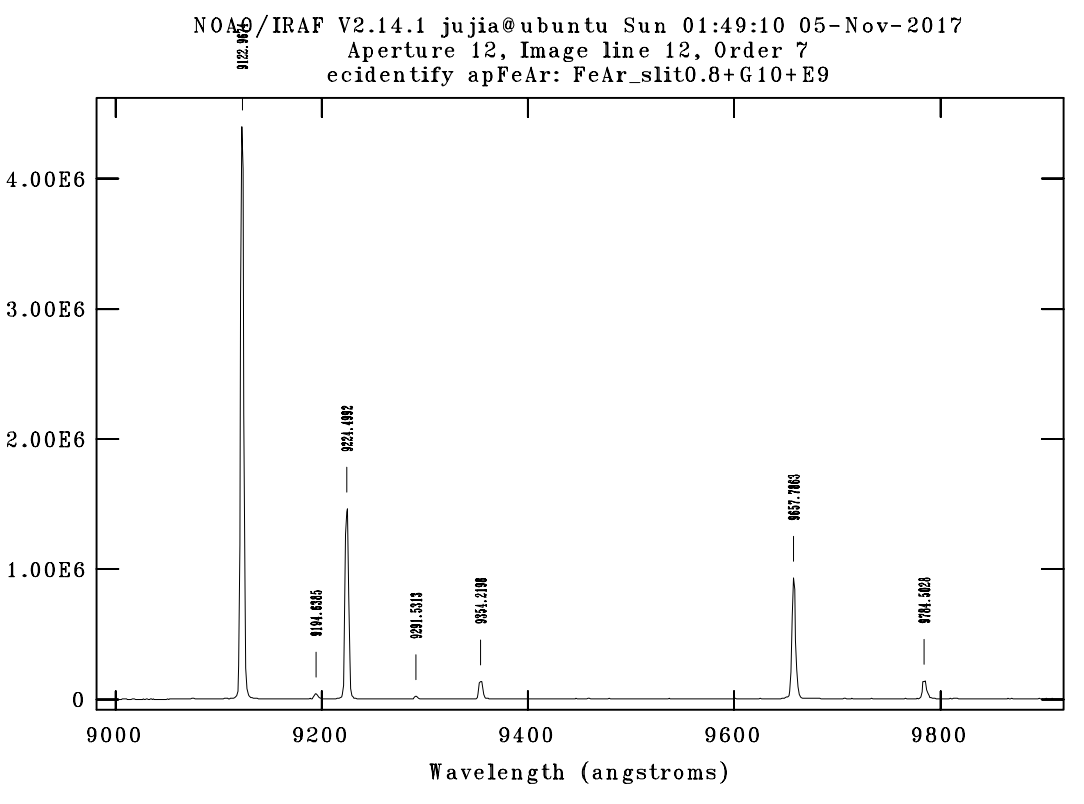

NOAO/IRAF V2.14.1 jujia@ubuntu Sun 01:46:02 05-Nov-2017
Aperture 7, Image line 7, Order 12
ecidentify apFeAr: FeAr_slit0.8+G10+E9
5227.1897
5269.5366
5328.0378
5341.0233
5371.4892
5397.1268
5405.7711
5429.6955
5451.6228
5454.6937
5460.6000
5495.8738
5558.7020
5606.7330
5650.7013
5739.5166
5806.5811
5812.0653
50000
40000
30000
20000
10000
0
5200
5300
5400
5500
5600
5700
5800
5900
Wavelength (angstroms)

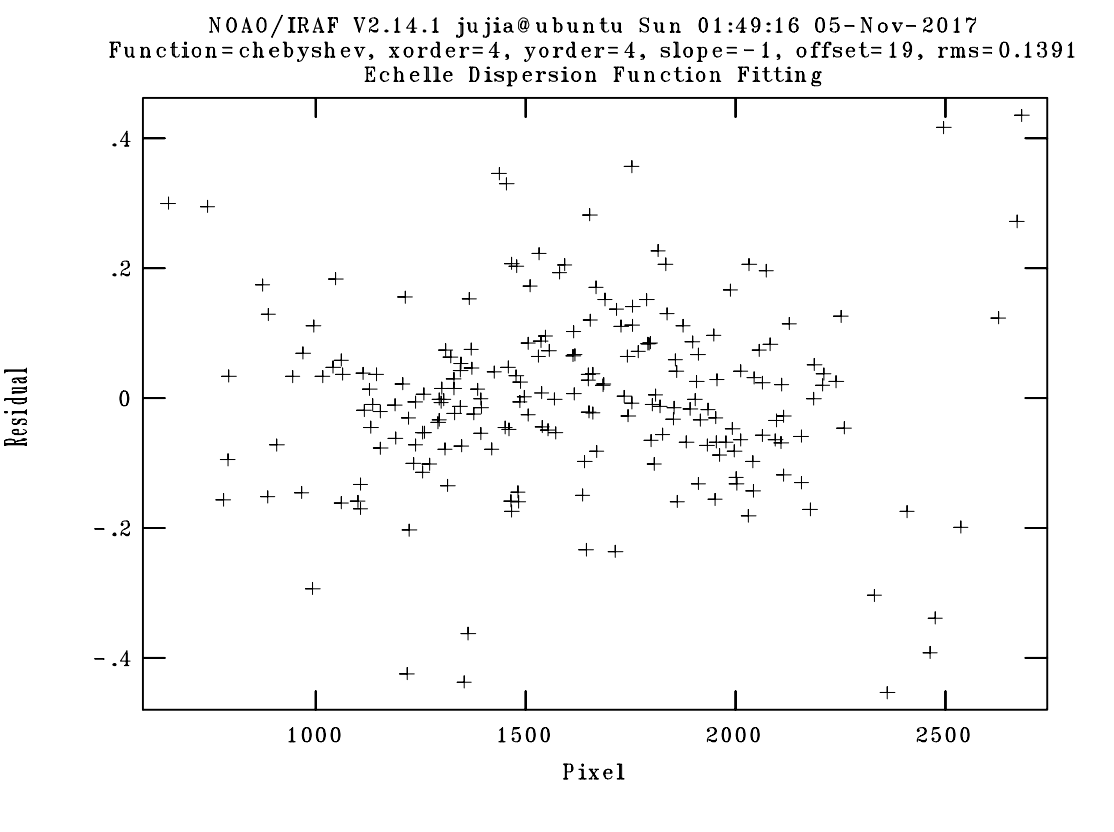

NOAO/IRAF V2.14.1 jujia@ubuntu Sun 01:46:16 05-Nov-2017
Aperture 8, Image line 8, Order 11
ecidentify apFeAr: FeAr_slit0.8+G10+E9
5739.5196
5834.2633
5860.3183
5886.5041
5912.0853
5928.8130
5987.3016
6032.1274
6043.2233
6059.3725
6105.6351
6172.2778
6307.6570
6384.7169
6416.3071
50000
40000
30000
20000
10000
0
5800
5900
6000
6100
6200
6300
6400
Wavelength (angstroms)


NOAO/IRAF V2.14.1 jujia@ubuntu Sun 04:47:22 05-Nov-2017
Aperture 9, Image line 9, Order 10
ecidentify apFeAr: FeAr_slit0.8+G10+E9
8.00E5
6.00E5
4.00E5
2.00E5
0
6032.1274
6111.9234
6172.2778
6384.7189
6416.3071
6483.0825
6604.6534
6677.2817
6752.8335
6871.2891
6937.6642
7030.2514
7147.0416
7206.9804
7272.9359
7383.9805
7503.8691
7514.6519
6250
6500
6750
7000
7250
7500
Wavelength (angstroms)


NOAO/IRAF V2.14.1 jujia@ubuntu Sun 01:48:05 05-Nov-2017
Aperture 10, Image Line 10, Order 9
ecidentify apFeAr: FeAr_slit0.8+G10+E9
5.00E6
4.00E6
3.00E6
2.00E6
1.00E6
0
6750
7000
7250
7500
7750
8000
8250
Wavelength (angstroms)
6716.2184
6752.8335
6871.2891
6937.6642
6965.4307
7107.4778
7147.0416
7272.9359
7383.9805
7405.6611
7514.6518
7635.1060
7948.1587
8103.6931
8115.3110
8264.5225


NOAO/IRAF V2.14.1 jujia@ubuntu Sun 01:48:56 05-Nov-2017
Aperture 11, Image line 11, Order 8
ecidentify apFeAr: FeAr_slit0.8+G10+E9
8.00E6
6.00E6
4.00E6
2.00E6
0
7750
8000
8250
8500
8750
9000
Wavelength (angstroms)
7891.0750
8006.1562
8014.7857
8103.6931
8264.5225
8408.2096
8421.9413
8521.4422
8605.7762
8667.9442
8761.8862
9122.9674


NOAO/IRAF V2.14.1 jujia@ubuntu Sun 01:49:10 05-Nov-2017
Aperture 12, Image line 12, Order 7
ecidentify apFeAr: FeAr_slit0.8+G10+E9
9122.9626
9194.6365
9224.4982
9291.5313
9354.2198
9657.7063
9784.5628
4.00E6
3.00E6
2.00E6
1.00E6
0
9000
9200
9400
9600
9800
Wavelength (angstroms)


NOAO/IRAF V2.14.1 jujia@ubuntu Sun 01:49:16 05-Nov-2017
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Echelle Dispersion Function Fitting
Residual
.4
.2
0
-.2
-.4
1000
1500
2000
2500
Pixel

Spectral line identificaiton of HeNe lamb for YFOSC Echelle model of LiJiang 2.4m telescope In the case of G10+E9+slit0.8*5.4

Created by Jujia Zhang
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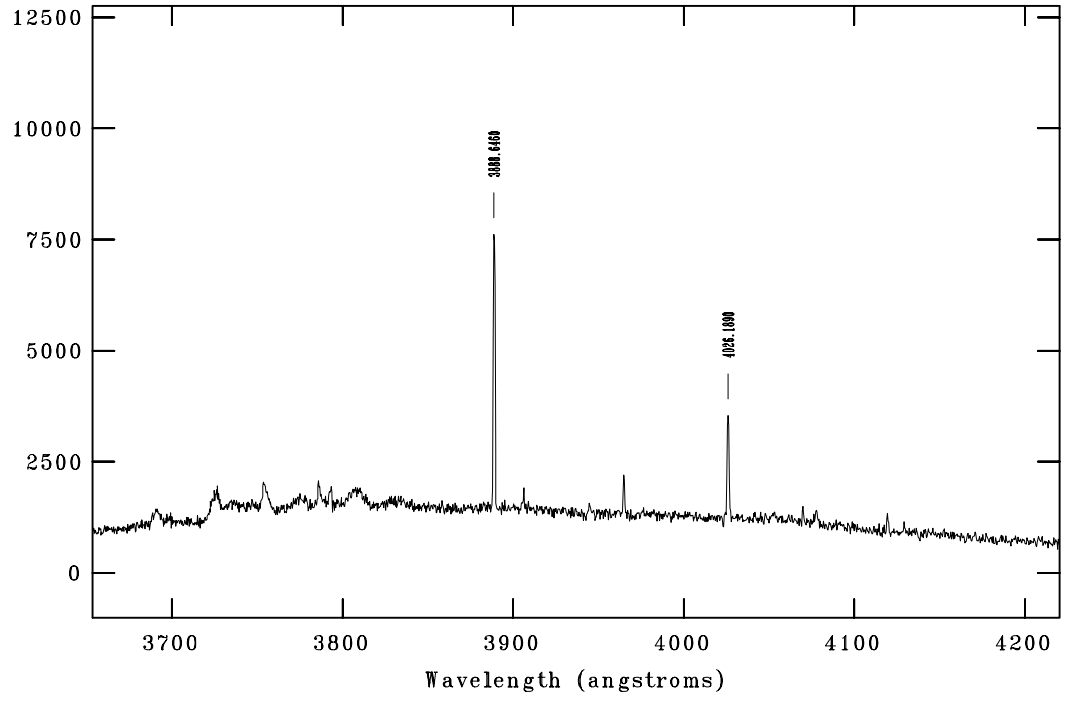
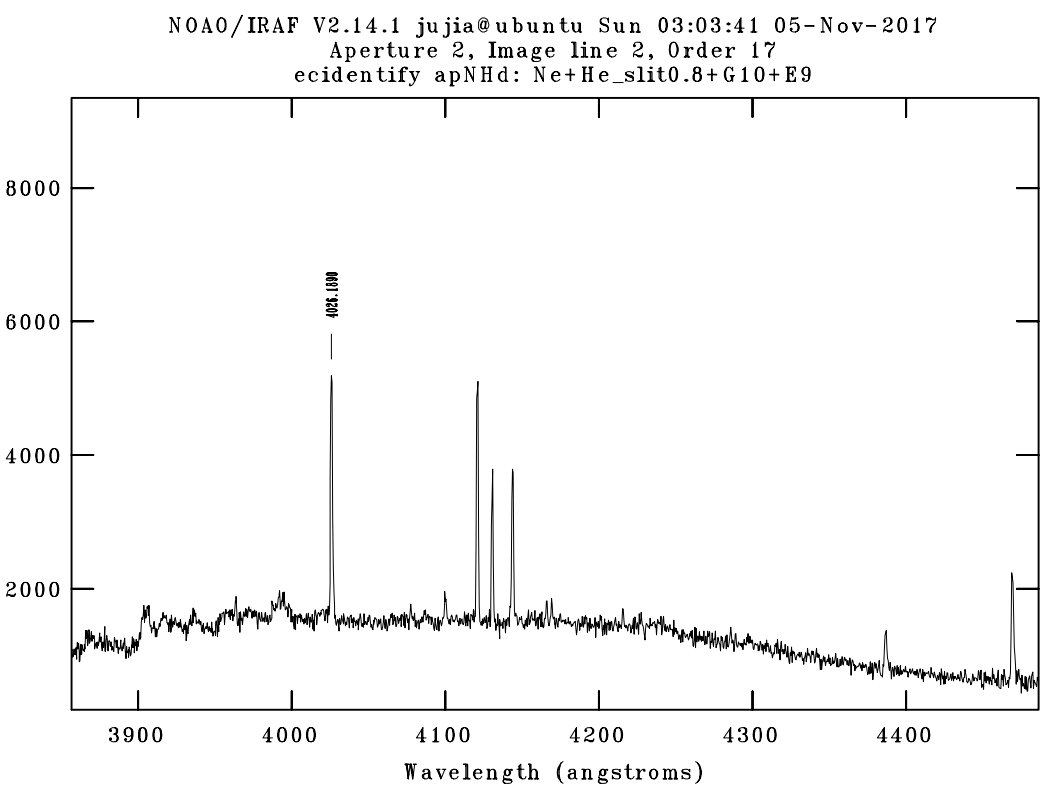
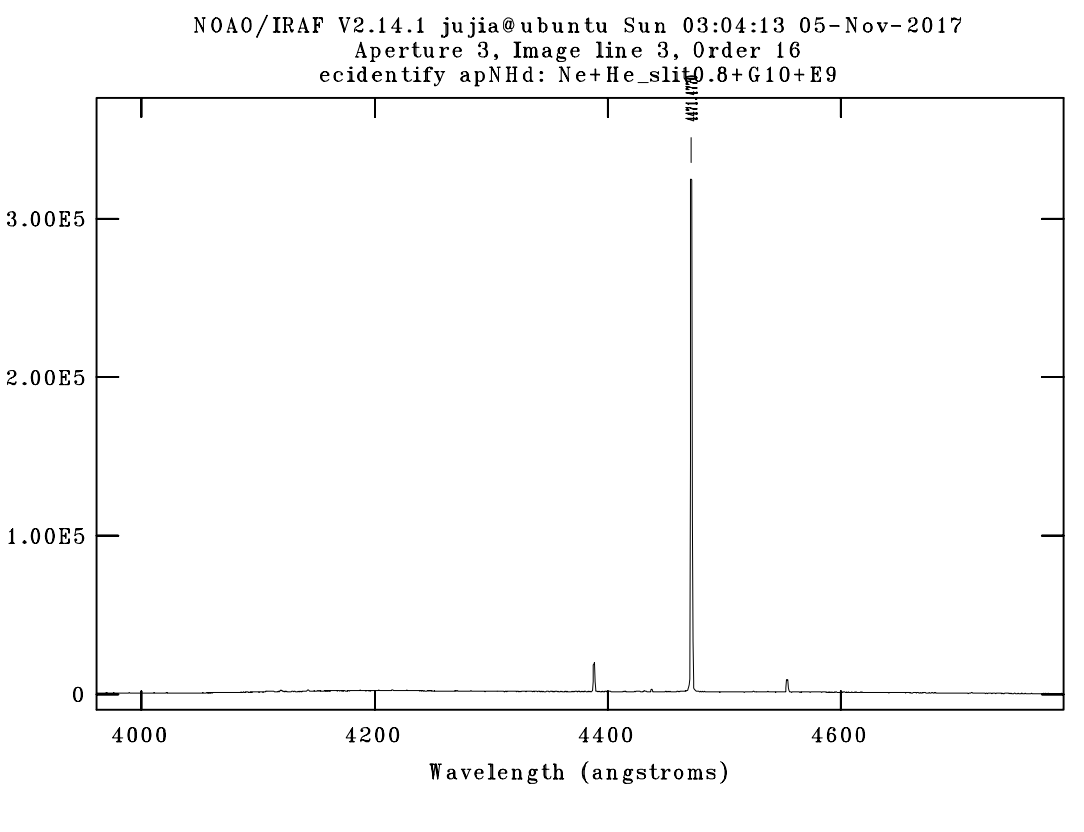
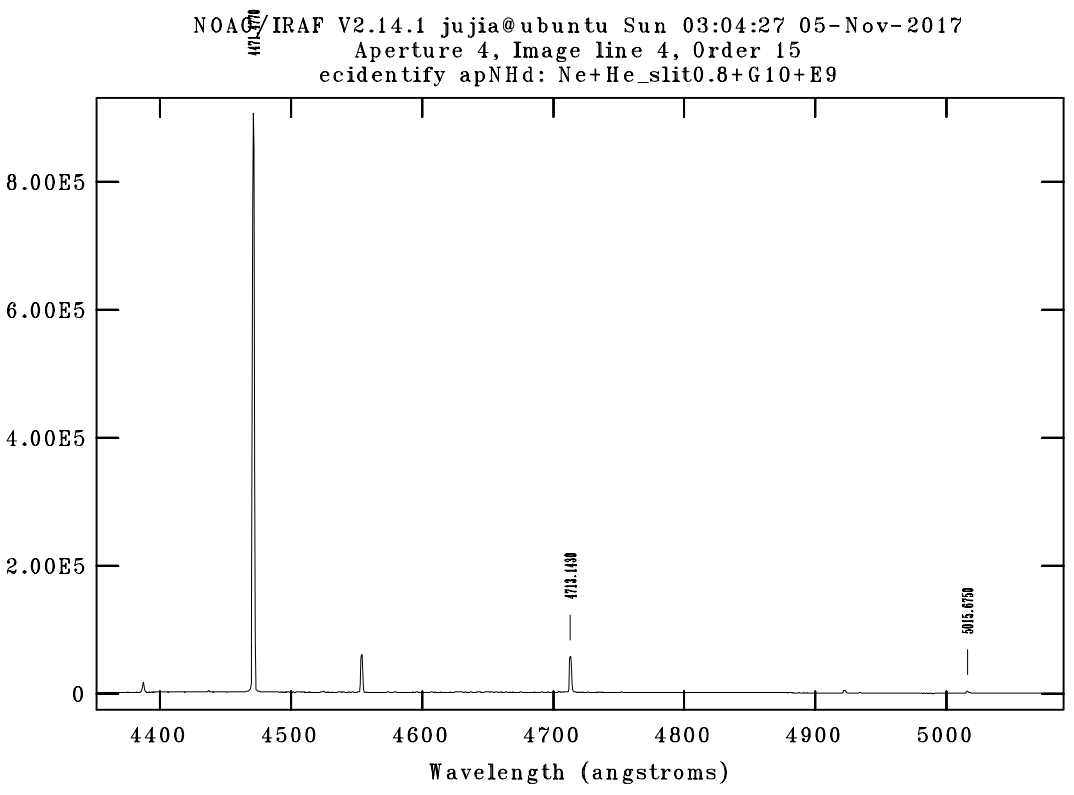
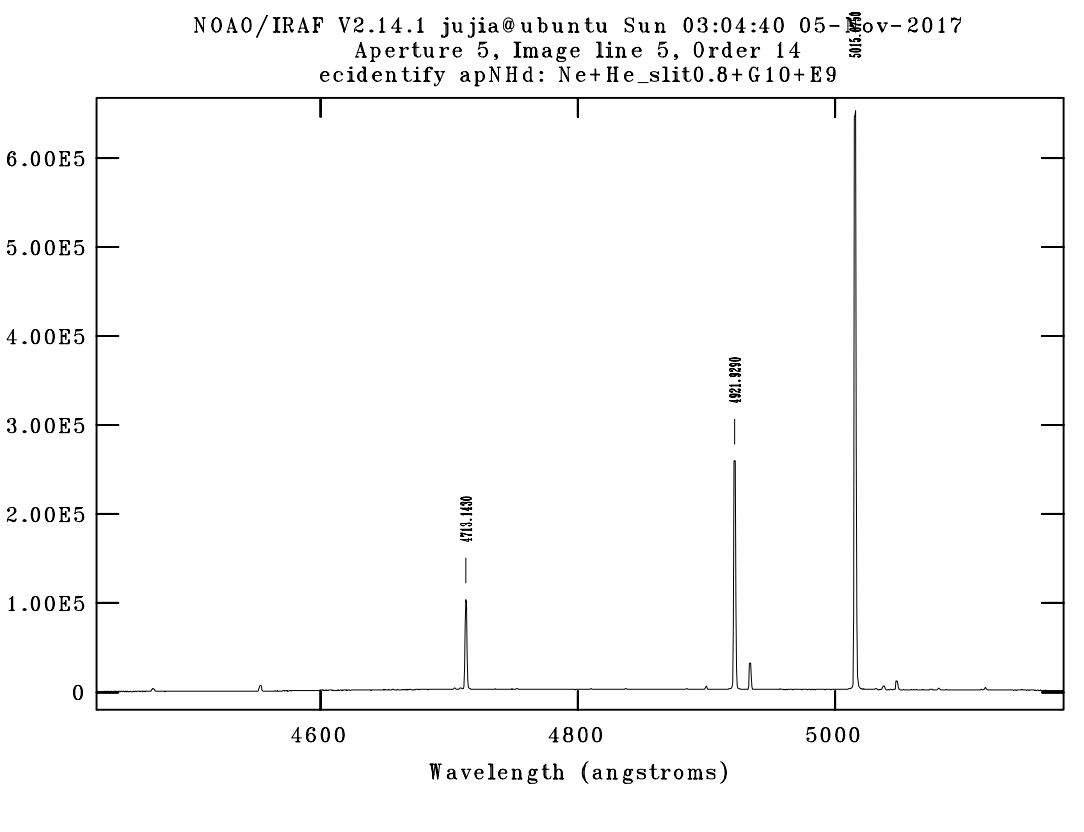
Noted: the spectra of each order are zoomed vertically and horizontally for better display.


NOAO/IRAF V2.14.1 jujia@ubuntu Sun 03:03:18 05-Nov-2017
Aperture 1, Image line 1, Order 18
ecidentify apNHd: Ne+He_slit0.8+G10+E9
12500
10000
7500
5000
2500
0
3888.6460
4026.1890
3700
3800
3900
4000
4100
4200
Wavelength (angstroms)


NOAO/IRAF V2.14.1 jujia@ubuntu Sun 03:03:41 05-Nov-2017
Aperture 2, Image line 2, Order 17
ecidentify apNHd: Ne+He_slit0.8+G10+E9
4026.1890
8000
6000
4000
2000
3900
4000
4100
4200
4300
4400
Wavelength (angstroms)


NOAO/IRAF V2.14.1 jujia@ubuntu Sun 03:04:13 05-Nov-2017
Aperture 3, Image line 3, Order 16
ecidentify apNHd: Ne+He_slit0.8+G10+E9
3.00E5
2.00E5
1.00E5
0
4000
4200
4400
4600
Wavelength (angstroms)


NOAO/IRAF V2.14.1 jujia@ubuntu Sun 03:04:27 05-Nov-2017
Aperture 4, Image line 4, Order 15
ecidentify apNHd: Ne+He_slit0.8+G10+E9
4713.1490
5015.6750
8.00E5
6.00E5
4.00E5
2.00E5
0
4400
4500
4600
4700
4800
4900
5000
Wavelength (angstroms)


NOAO/IRAF V2.14.1 jujia@ubuntu Sun 03:04:40 05-Nov-2017
Aperture 5, Image line 5, Order 14
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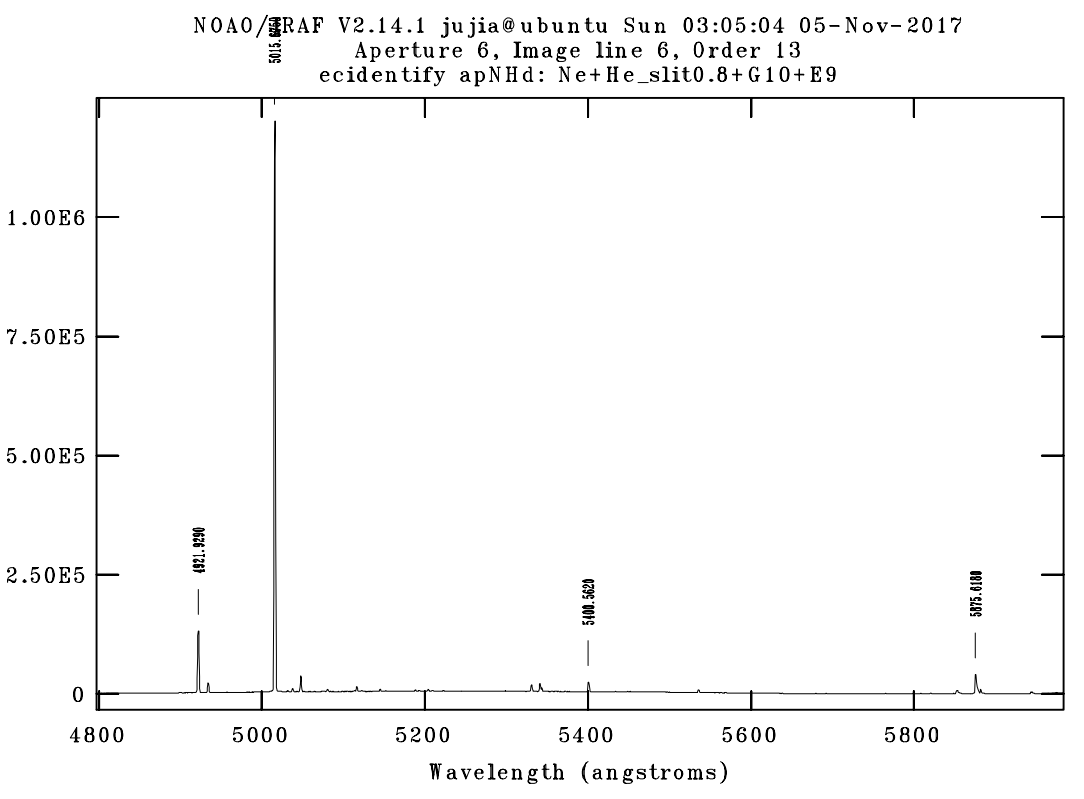
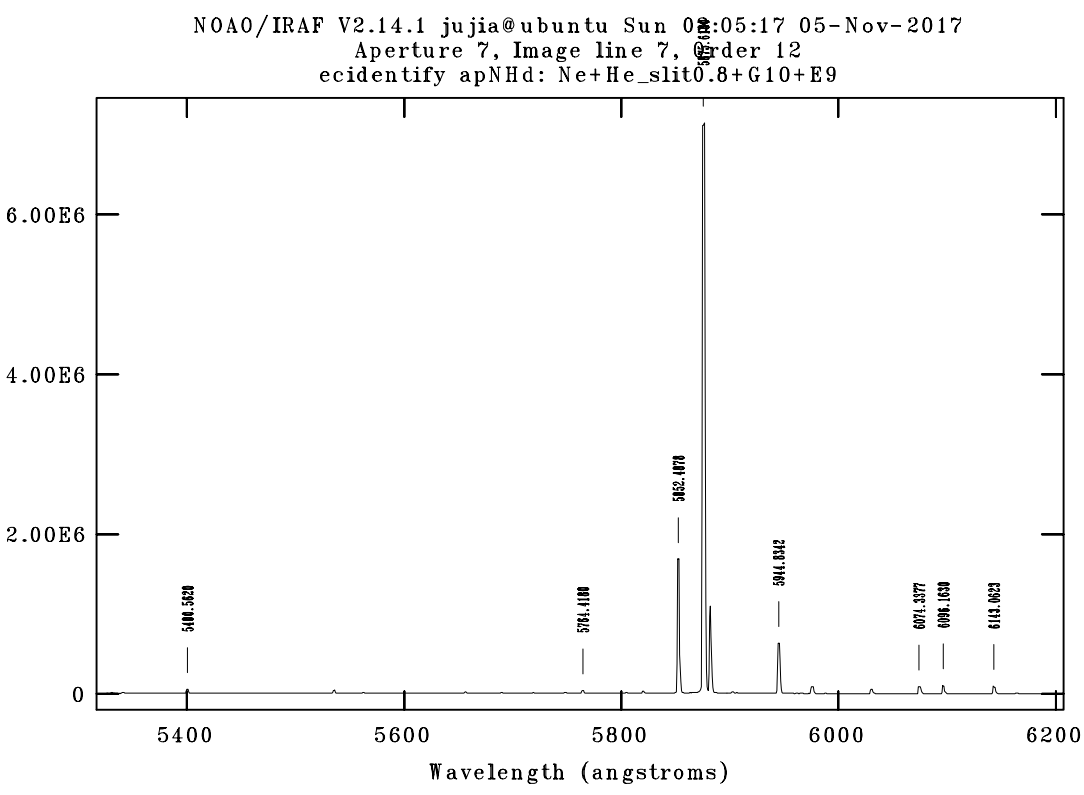
4713.1430
4921.8290
5015.6780
6.00E5
5.00E5
4.00E5
3.00E5
2.00E5
1.00E5
0
4600
4800
5000
Wavelength (angstroms)


NOAO/IRAF V2.14.1 jujia@ubuntu Sun 03:05:04 05-Nov-2017
Aperture 6, Image line 6, Order 13
ecidentify apNHd: Ne+He_slit0.8+G10+E9
5015.6960
4921.9290
5400.5620
5875.6180
1.00E6
7.50E5
5.00E5
2.50E5
0
4800
5000
5200
5400
5600
5800
Wavelength (angstroms)


NOAO/IRAF V2.14.1 jujia@ubuntu Sun 08:05:17 05-Nov-2017
Aperture 7, Image line 7, Order 12
ecidentify apNHd: Ne+He_slit0.8+G10+E9
6.00E6
4.00E6
2.00E6
0
5400.5820
5764.4180
5852.4878
5944.8342
6074.3377
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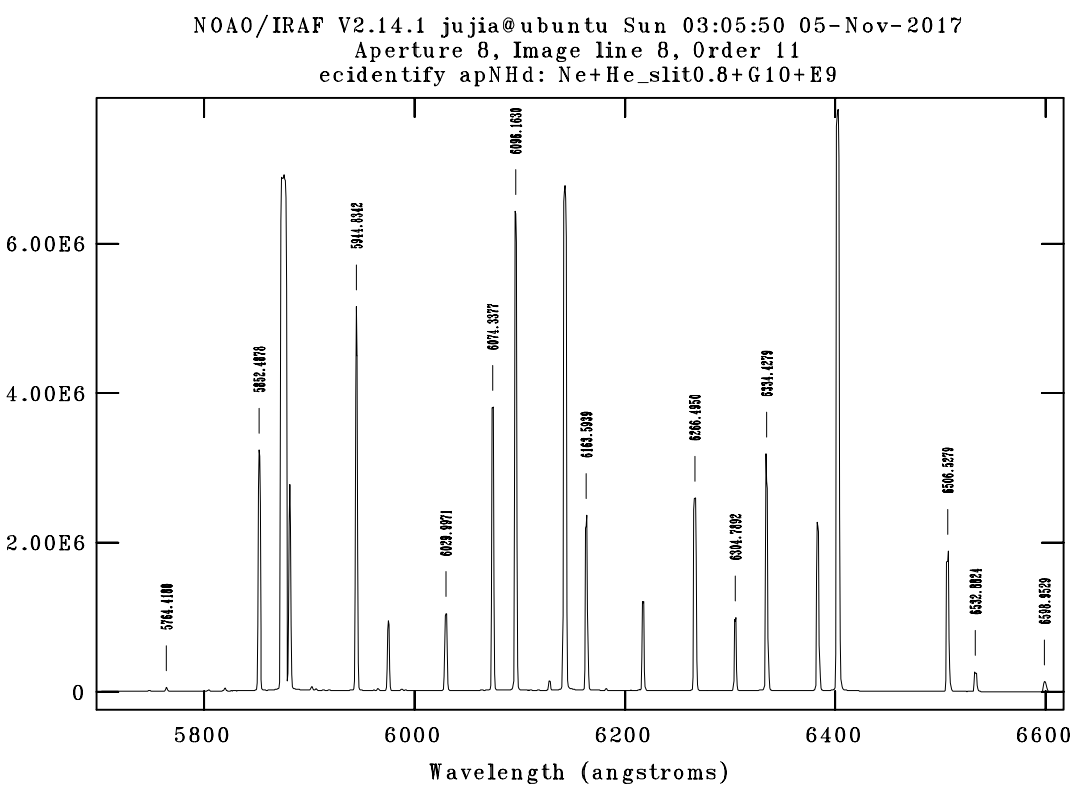
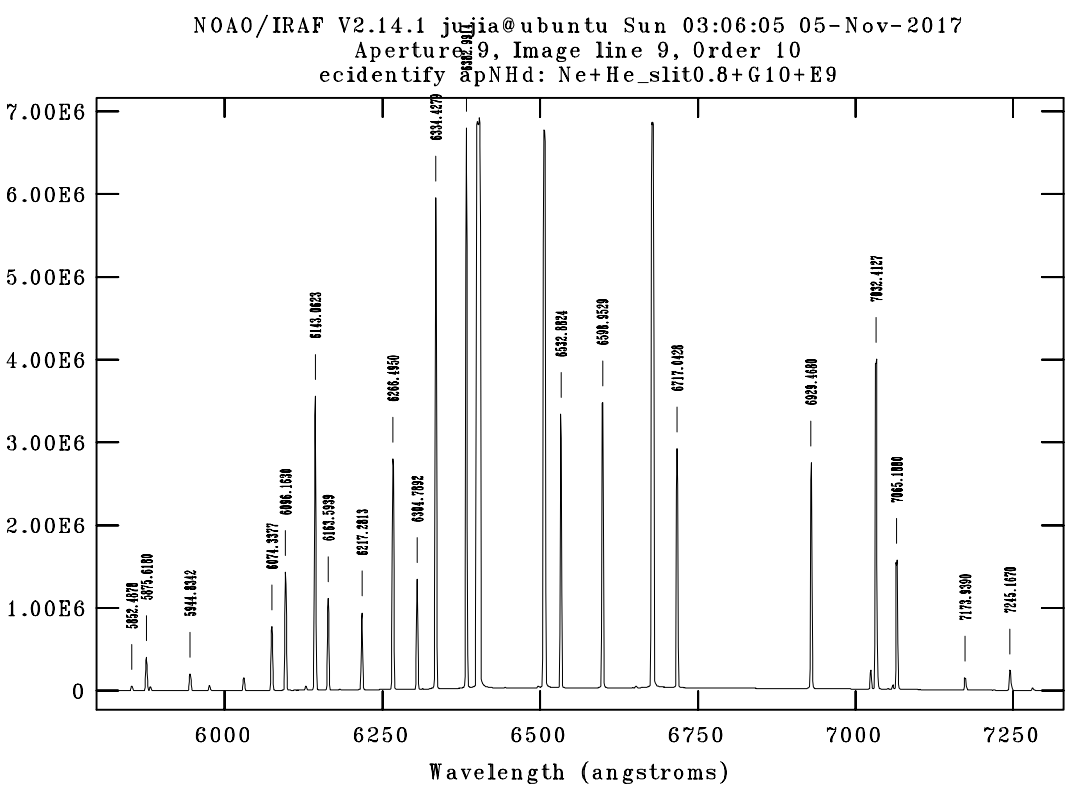
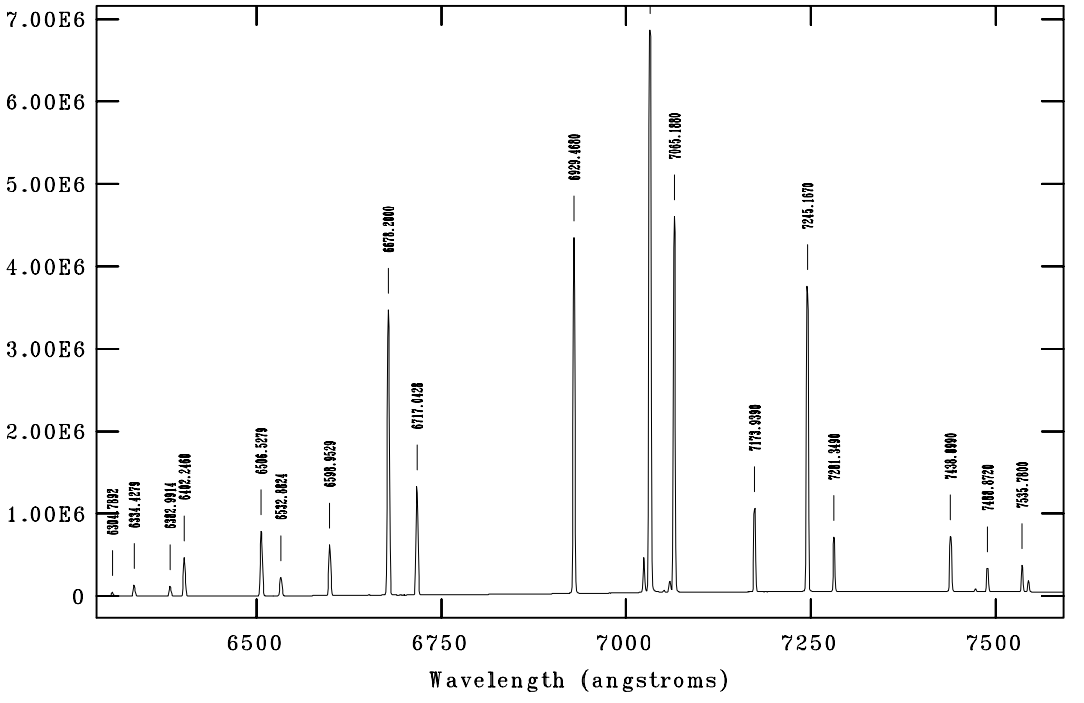
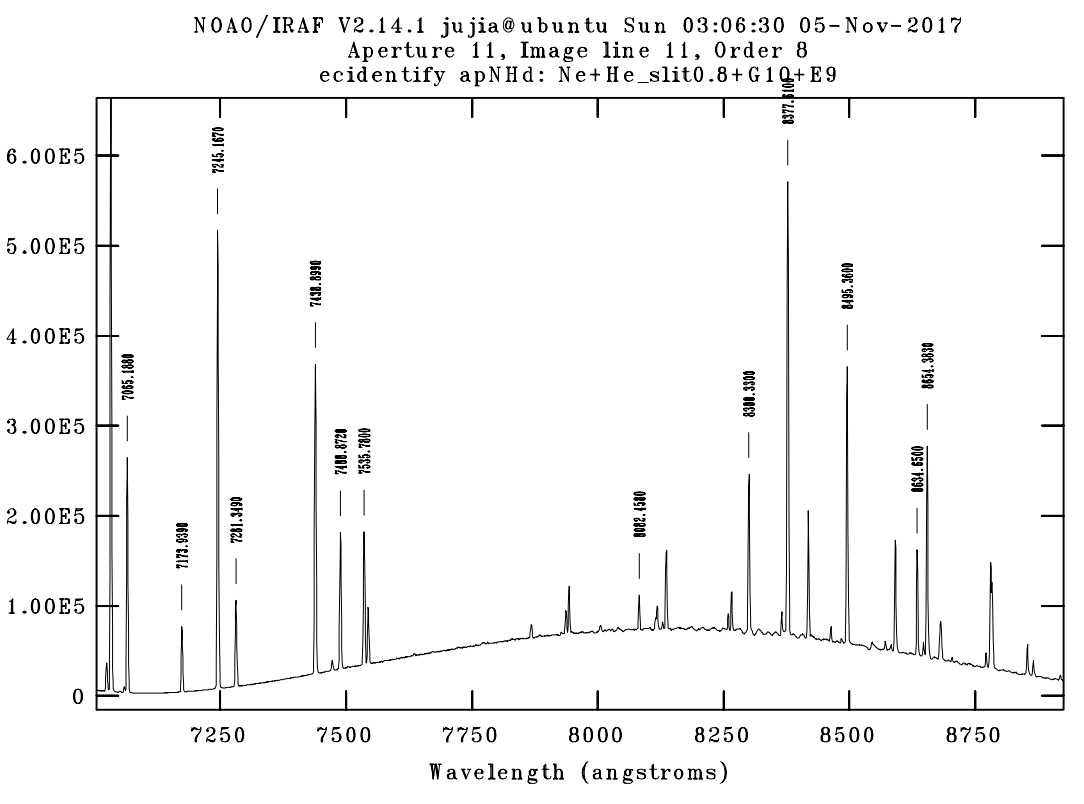
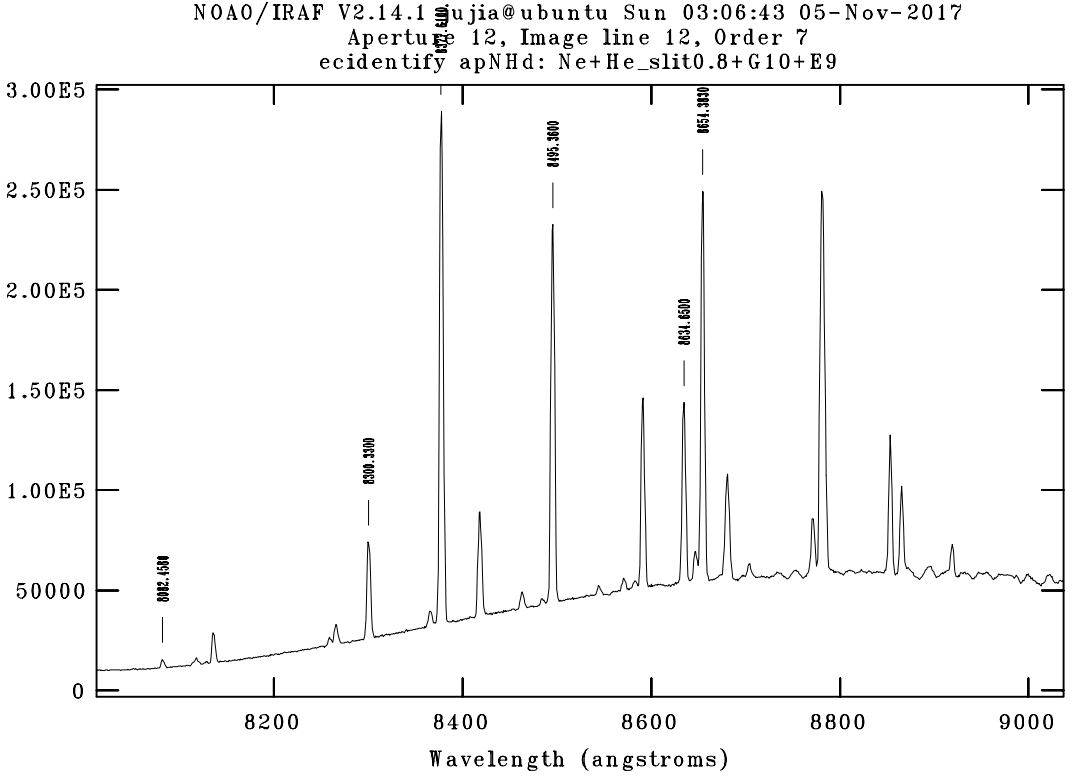
5400
5600
5800
6000
6200
Wavelength (angstroms)

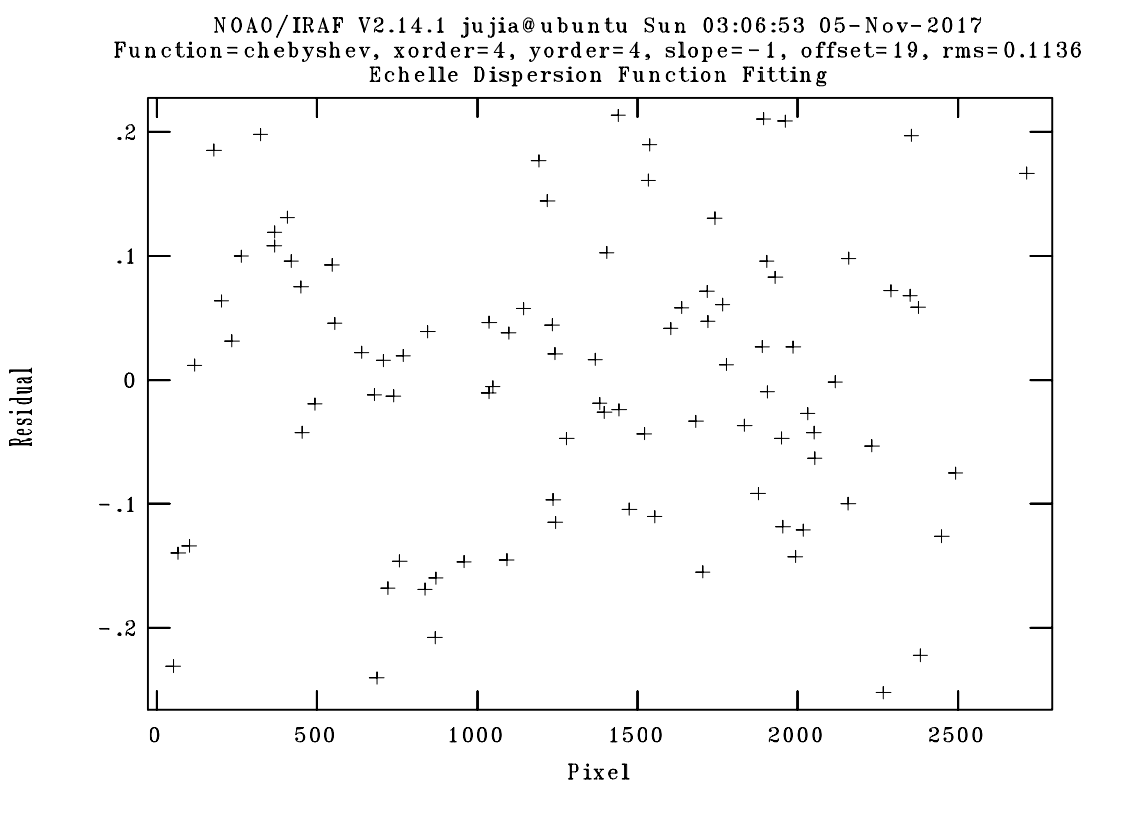

NOAO/IRAF V2.14.1 jujia@ubuntu Sun 03:05:50 05-Nov-2017
Aperture 8, Image line 8, Order 11
ecidentify apNHd: Ne+He_slit0.8+G10+E9
6.00E6
4.00E6
2.00E6
0
5784.1100
5852.4878
5944.8342
6029.9971
6074.3377
6096.1630
6163.5939
6266.4956
6304.7892
6334.4279
6506.5279
6532.8824
6598.9529
5800
6000
6200
6400
6600
Wavelength (angstroms)


NOAO/IRAF V2.14.1 julia@ubuntu Sun 03:06:05 05-Nov-2017
Aperture 9, Image line 9, Order 10
ecidentify apNHd: Ne+He_slit0.8+G10+E9
7.00E6
6.00E6
5.00E6
4.00E6
3.00E6
2.00E6
1.00E6
0
5852.4878
5875.6100
5944.8342
6074.3377
6096.1630
6163.5939
6217.2813
6266.4950
6304.7892
6334.4279
6382.9911
6402.2460
6532.8824
6598.9529
6717.0428
6929.4680
7032.4127
7065.1880
7173.9390
7245.1670
6000
6250
6500
6750
7000
7250
Wavelength (angstroms)


NOAO/IRAF V2.14.1 jujia@ubuntu Sun 03:06:16 05-Nov-2017
Aperture 10, Image line 10, Order 9
ecidentify apNHd: Ne+He_slit0.8+G10+E9
7.00E6
6.00E6
5.00E6
4.00E6
3.00E6
2.00E6
1.00E6
0
6304.7892
6334.4279
6382.9914
6402.2460
6506.5279
6532.8824
6598.9529
6678.2800
6717.0428
6929.4680
7032.4130
7065.1880
7173.9390
7245.1670
7281.3490
7438.8990
7488.8720
7535.7800
6500
6750
7000
7250
7500
Wavelength (angstroms)


NOAO/IRAF V2.14.1 jujia@ubuntu Sun 03:06:30 05-Nov-2017
Aperture 11, Image line 11, Order 8
ecidentify apNHd: Ne+He_slit0.8+G10+E9
6.00E5
5.00E5
4.00E5
3.00E5
2.00E5
1.00E5
0
7065.1000
7173.9390
7245.1670
7281.3490
7438.8990
7488.6720
7535.7800
8082.4940
8300.3300
8377.8100
8495.3600
8631.6500
8651.3830
7250
7500
7750
8000
8250
8500
8750
Wavelength (angstroms)


NOAO/IRAF V2.14.1 jujia@ubuntu Sun 03:06:43 05-Nov-2017
Aperture 12, Image line 12, Order 7
ecidentify apNHd: Ne+He_slit0.8+G10+E9
8082.4500
8300.3900
8495.3600
8634.6500
8651.3830
3.00E5
2.50E5
2.00E5
1.50E5
1.00E5
50000
0
8200
8400
8600
8800
9000
Wavelength (angstroms)


NOAO/IRAF V2.14.1 jujia@ubuntu Sun 03:06:53 05-Nov-2017
Function=chebyshev, xorder=4, yorder=4, slope=-1, offset=19, rms=0.1136
Echelle Dispersion Function Fitting
Residual
.2
.1
0
-.1
-.2
0
500
1000
1500
2000
2500
Pixel