UVES Thorium-Argon Atlas

Setup: BLUE Echelle, CD#2 @ 437 nm

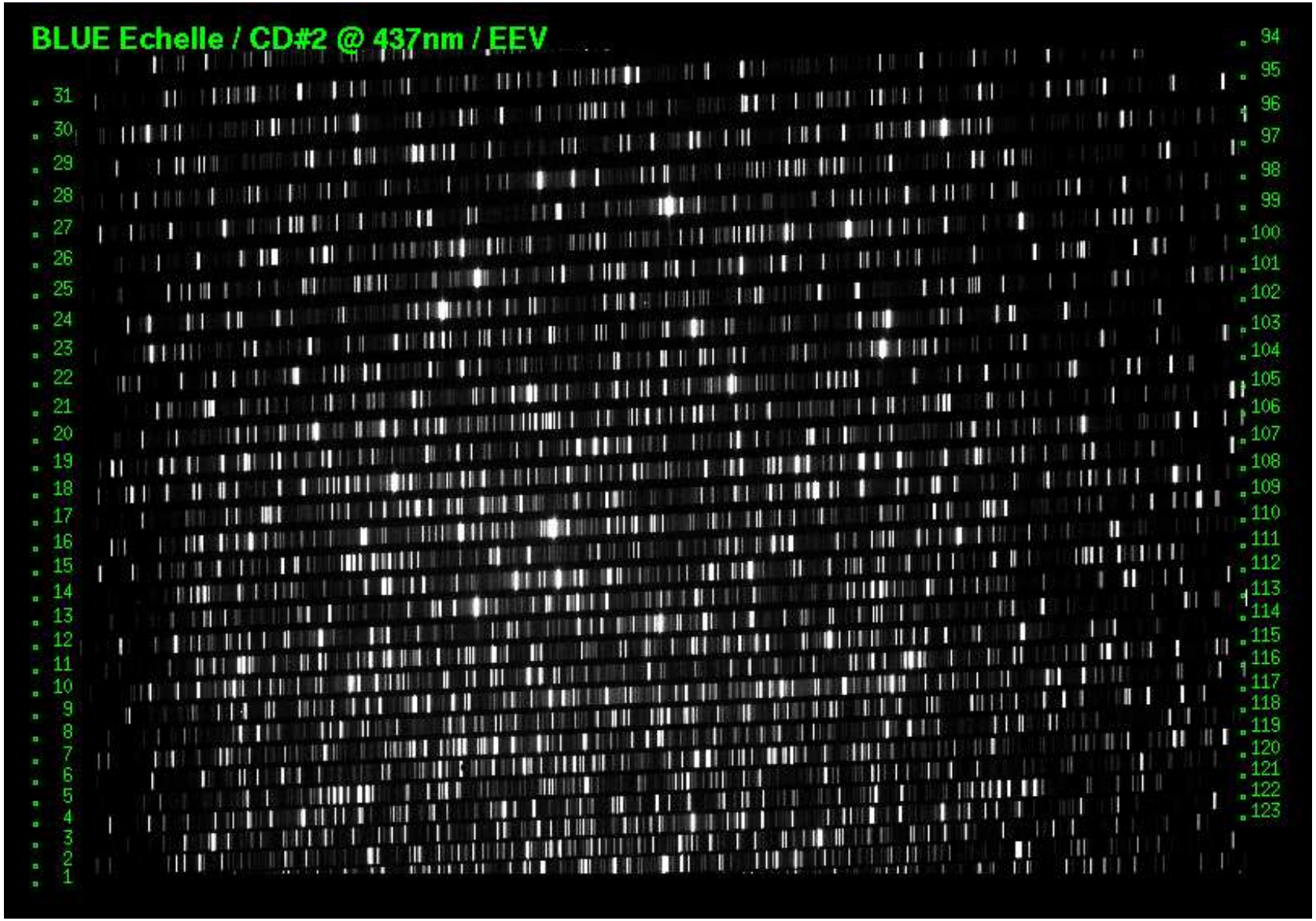
V0.1 2000-05-14 by A.Kaufer, ESO-Paranal

Contents:

- 2D image of the Thorium-Argon frame with
  - the instrument setup identified on the top,
  - the running number of the (extracted) order to the left,
  - the absolute order number to the right.
- plots of all extracted 1D orders with
  - the extracted order number, the absolute order number, and the instrument setup identified on the top,
  - the extracted Thorium-Argon spectrum in x-pixel coordinates
  - the lines identified by their wavelength (in blue)
- resolution plot as derived from the extracted Thorium-Argon spectrum

Information:

- The Thorium-Argon exposures have been taking with the following settings:
  - slitwidth: 0.5 arcsec
  - exposure time: 15 secs
  - CCD setup: readout-speed 225kHz, low gain, binning 1x1
- The CCD frames have been extracted and flipped/transposed with the SPLIT/UVES tool available in the MIDAS context `uves`:
  - $\rightarrow$ the overscan regions are removed
  - $\rightarrow$ the orders are oriented to have a positive slope
  - $\rightarrow$ wavelengths are increasing from bottom to top


BLUE Echelle / CD#2 @ 437nm / EEV
31
30
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26
25
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16
15
14
13
12
11
10
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7
6
5
4
3
2
1
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123

row #1 / order #124 / BLUE Echelle / CD#2 @ 437nm / EEV
intensity (ADU)
position (pixel)
6000
4000
2000
0
0
1000
2000
3000
3789.167
3783.296
3780.966
3776.271
3772.650
3771.370
3770.540
3770.056
3769.585
3767.901
3765.270
3762.933
3758.467
3757.694
3756.294
3755.212
3754.593
3752.569
3751.022
3749.084
3745.970

row #2 / order #123 / BLUE Echelle / CD#2 @ 437nm / EEV
intensity (ADU)
position (pixel)
6000
4000
2000
0
0
1000
2000
3000
3818.685
3813.067
3810.995
3809.490
3807.874
3803.984
3803.075
3800.198
3798.103
3797.207
3795.385
3794.698
3792.374
3790.794
3790.355
3789.167
3785.600
3783.296
3780.966
3776.271
3771.370
3770.540
3770.056

row #3 / order #122 / BLUE Echelle / CD#2 @ 437nm / EEV
position (pixel)
intensity (ADU)
0
1000
2000
3000
0
2000
4000
6000
3850.570
3845.420
3842.896
3841.960
3840.800
3839.700
3837.875
3836.572
3834.679
3833.086
3831.640
3830.773
3830.060
3828.384
3826.830
3826.369
3825.700
3825.111
3823.067
3822.146
3821.431
3820.792
3818.685
3815.566
3813.067
3810.995
3809.490
3807.874
3803.984
3803.075

row #4 / order #121 / BLUE Echelle / CD#2 @ 437nm / EEV
intensity (ADU)
position (pixel)
6000
4000
2000
0
0
1000
2000
3000
3828.384
3830.773
3834.679
3836.572
3837.875
3839.200
3840.800
3841.960
3842.896
3845.420
3846.887
3850.570
3852.135
3854.510
3856.354
3859.839
3862.421
3863.406
3866.909
3868.530
3869.663
3872.722
3873.148
3873.474
3873.822
3874.243
3874.862
3875.373
3879.644

row #5 / order #120 / BLUE Echelle / CD#2 @ 437nm / EEV
intensity (ADU)
position (pixel)
6000
4000
2000
0
0
1000
2000
3000
3911.909
3903.102
3901.662
3900.878
3898.437
3895.419
3893.652
3891.970
3886.916
3884.822
3879.644
3878.662
3875.373
3874.862
3874.243
3873.822
3873.474
3873.148
3872.722
3869.663
3868.530

row #6 / order #119 / BLUE Echelle / CD#2 @ 437nm / EEV
intensity (ADU)
position (pixel)
6000
4000
2000
0
0
1000
2000
3000
3948.030
3946.100
3944.270
3934.274
3933.661
3932.911
3932.550
3931.256
3929.669
3928.620
3925.720
3925.093
3923.799
3919.023
3918.070
3917.269
3916.417
3915.848
3914.760
3911.909
3903.102
3901.662
3900.878
3898.437
3895.419

row #7 / order #118 / BLUE Echelle / CD#2 @ 437nm / EEV
intensity (ADU)
position (pixel)
0
2000
4000
6000
0
1000
2000
3000
3928.620
3929.669
3932.550
3932.911
3938.614
3942.073
3943.394
3944.270
3945.135
3946.100
3947.331
3947.504
3948.030
3948.979
3950.395
3951.515
3952.740
3955.170
3955.890
3956.690
3959.300
3960.269
3961.521
3962.419
3964.030
3967.392
3969.002
3969.664
3972.154
3972.639
3973.196
3974.480
3979.360
3980.089

row #8 / order #117 / BLUE Echelle / CD#2 @ 437nm / EEV
position (pixel)
intensity (ADU)
0
1000
2000
3000
0
2000
4000
6000
3967.392
3972.154
3972.639
3973.196
3974.480
3979.360
3980.089
3981.106
3984.879
3987.206
3988.027
3988.599
3990.492
3991.730
3994.549
3996.061
3996.668
3998.733
4000.281
4001.058
4001.893
4003.308
4005.092
4007.018
4008.210
4009.057
4011.739
4012.495
4013.870
4014.716

row #9 / order #116 / BLUE Echelle / CD#2 @ 437nm / EEV
intensity (ADU)
position (pixel)
0
2000
4000
6000
0
1000
2000
3000
4049.944
4044.418
4043.394
4042.910
4041.203
4039.864
4036.565
4036.048
4035.470
4032.595
4030.842
4030.292
4029.825
4029.657
4027.009
4026.147
4025.655
4024.802
4023.338
4022.076
4020.354
4019.129
4018.099
4014.716
4013.870
4012.495
4011.739
4009.819
4009.057
4008.210
4007.018
4005.092
4001.893
4001.058
4000.281

row #10 / order #115 / BLUE Echelle / CD#2 @ 437nm / EEV
position (pixel)
intensity (ADU)
0
1000
2000
3000
0
2000
4000
6000
4085.042
4083.468
4082.400
4081.367
4080.670
4079.600
4076.960
4076.640
4075.503
4073.856
4072.400
4072.010
4070.238
4069.461
4069.201
4067.450
4064.331
4063.407
4059.253
4053.527
4052.940
4050.887
4049.944
4048.287
4044.418
4043.394
4042.910
4041.203
4039.864
4036.565
4036.048
4035.470
4033.862
4030.842

row #11 / order #114 / BLUE Echelle / CD#2 @ 437nm / EEV
position (pixel)
intensity (ADU)
0
1000
2000
3000
0
2000
4000
6000
4067.450
4069.201
4070.238
4072.010
4073.856
4075.503
4076.640
4076.960
4079.600
4080.670
4081.367
4082.400
4083.468
4085.042
4085.434
4086.520
4087.284
4088.726
4089.137
4094.747
4096.076
4097.150
4097.747
4100.341
4102.617
4103.910
4105.337
4107.050
4107.853
4108.419
4109.323
4110.826
4112.754
4115.759
4116.713

row #12 / order #113 / BLUE Echelle / CD#2 @ 437nm / EEV
intensity (ADU)
position (pixel)
6000
4000
2000
0
0
1000
2000
3000
4100.341
4103.910
4107.050
4107.853
4108.419
4109.323
4110.826
4112.754
4115.759
4116.713
4127.412
4128.650
4131.002
4132.753
4134.068
4135.480
4136.285
4138.040
4140.235
4142.701
4143.649
4148.181
4149.987
4156.110

row #13 / order #112 / BLUE Echelle / CD#2 @ 437nm / EEV
position (pixel)
intensity (ADU)
0
1000
2000
3000
0
2000
4000
6000
4142.701
4143.649
4148.181
4149.987
4154.720
4156.110
4156.516
4157.280
4157.395
4158.590
4161.738
4162.509
4164.179
4165.766
4168.634
4170.533
4178.059
4179.715
4181.883
4184.137
4190.712
4191.028
4193.016
4194.936

row #14 / order #111 / BLUE Echelle / CD#2 @ 437nm / EEV
intensity (ADU)
position (pixel)
6000
4000
2000
0
0
1000
2000
3000
4178.059
4179.253
4179.715
4181.883
4184.137
4189.561
4190.712
4191.028
4192.362
4193.016
4194.936
4198.317
4200.675
4204.041
4208.411
4208.890
4210.004
4210.923
4213.067
4214.828
4216.069
4217.450
4218.690
4220.068
4222.670
4223.440
4223.593
4226.726
4227.387
4228.180
4229.147
4229.890
4230.426

row #15 / order #110 / BLUE Echelle / CD#2 @ 437nm / EEV
position (pixel)
intensity (ADU)
0
1000
2000
3000
0
2000
4000
6000
4210.923
4214.828
4217.450
4218.690
4220.068
4222.670
4223.440
4226.299
4226.726
4227.387
4228.180
4229.147
4229.890
4230.426
4235.463
4237.230
4241.094
4247.988
4248.390
4250.314
4251.185
4253.538
4255.237
4256.253
4257.496
4258.520
4259.361
4260.333
4266.286

row #16 / order #109 / BLUE Echelle / CD#2 @ 437nm / EEV
position (pixel)
intensity (ADU)
0
1000
2000
3000
0
2000
4000
6000
4250.314
4255.237
4256.253
4257.496
4258.520
4259.361
4260.333
4266.286
4269.942
4272.168
4272.874
4273.357
4274.024
4275.190
4276.807
4277.314
4277.550
4278.323
4280.568
4281.067
4281.414
4282.041
4282.900
4283.518
4286.228
4288.668
4291.809
4294.719
4297.306
4297.990
4299.635
4299.839
4300.100
4300.660
4307.176
4308.122
4309.250

row #17 / order #108 / BLUE Echelle / CD#2 @ 437nm / EEV
intensity (ADU)
position (pixel)
0
2000
4000
6000
0
1000
2000
3000
4349.072
4348.110
4346.436
4345.167
4344.326
4343.951
4342.444
4340.895
4338.107
4337.227
4335.709
4335.337
4333.560
4330.843
4328.915
4325.274
4320.126
4318.415
4315.254
4314.319
4312.997
4311.799
4309.940
4309.250
4308.600
4308.122
4307.176
4306.366
4304.956
4300.660
4300.100
4299.839
4297.635
4297.990
4297.306

row #18 / order #107 / BLUE Echelle / CD#2 @ 437nm / EEV
position (pixel)
intensity (ADU)
0
1000
2000
3000
0
2000
4000
6000
4332.060
4333.560
4335.337
4335.709
4338.277
4340.895
4342.444
4343.951
4344.326
4345.167
4345.851
4348.110
4349.072
4352.230
4352.612
4353.448
4354.482
4358.320
4359.372
4362.070
4363.794
4365.930
4366.436
4369.494
4369.875
4370.760
4371.360
4374.124
4374.785
4375.960
4378.176
4381.402
4381.860
4384.656
4385.080
4387.787
4391.110

row #19 / order #106 / BLUE Echelle / CD#2 @ 437nm / EEV
position (pixel)
intensity (ADU)
0
1000
2000
3000
0
2000
4000
6000
4370.760
4371.360
4374.124
4374.785
4375.960
4378.176
4379.740
4381.402
4381.860
4384.656
4385.080
4387.787
4391.110
4392.974
4393.759
4397.915
4400.090
4401.020
4401.581
4402.927
4404.910
4408.482
4408.883
4412.739
4412.893
4414.486
4416.237
4416.844
4420.900
4422.048
4423.720
4426.010
4430.180
4431.020
4432.252

row #20 / order #105 / BLUE Echelle / CD#2 @ 437nm / EEV
intensity (ADU)
position (pixel)
0
2000
4000
6000
0
1000
2000
3000
4414.486
4416.844
4420.900
4422.048
4423.720
4426.010
4430.180
4431.020
4432.252
4432.963
4433.830
4438.746
4439.123
4439.480
4440.866
4441.608
4443.665
4445.033
4445.315
4445.901
4447.834
4448.880
4450.793
4452.565
4458.001
4460.530
4461.241
4461.527
4463.666
4465.340
4469.525
4474.770
4475.221

row #21 / order #104 / BLUE Echelle / CD#2 @ 437nm / EEV
intensity (ADU)
position (pixel)
0
2000
4000
6000
0
1000
2000
3000
4458.001
4461.241
4461.527
4463.666
4465.340
4469.525
4470.990
4474.770
4475.221
4478.595
4479.637
4480.822
4481.830
4482.169
4483.346
4485.713
4486.897
4487.495
4488.312
4488.680
4489.664
4490.990
4493.333
4497.914
4498.550
4498.940
4499.983
4502.950
4505.216
4506.494
4510.526
4510.733
4513.223
4513.680
4515.118

row #22 / order #103 / BLUE Echelle / CD#2 @ 437nm / EEV
position (pixel)
intensity (ADU)
0
1000
2000
3000
0
2000
4000
6000
4561.347
4555.812
4552.153
4547.780
4547.249
4545.915
4545.000
4544.514
4540.999
4537.670
4537.144
4535.254
4534.120
4533.304
4533.077
4532.257
4530.570
4522.323
4521.194
4519.259
4515.118
4513.680
4513.223
4510.733
4506.494
4505.216
4502.950
4499.983
4498.940

row #23 / order #102 / BLUE Echelle / CD#2 @ 437nm / EEV
intensity (ADU)
position (pixel)
0
2000
4000
6000
0
1000
2000
3000
4603.144
4598.770
4596.097
4595.420
4593.643
4592.666
4589.930
4588.426
4581.173
4579.827
4577.823
4570.972
4568.142
4567.240
4563.661
4561.347
4558.346
4555.812
4552.153
4547.249
4545.915
4545.080

row #24 / order #101 / BLUE Echelle / CD#2 @ 437nm / EEV
intensity (ADU)
position (pixel)
0
2000
4000
6000
0
1000
2000
3000
4588.426
4589.930
4592.666
4595.420
4596.097
4598.770
4603.144
4607.934
4608.620
4609.600
4611.859
4612.543
4613.604
4615.024
4615.334
4619.479
4621.163
4628.441
4631.761
4633.765
4637.250
4638.685
4640.046
4641.253
4646.686
4647.251
4650.234

row #25 / order #100 / BLUE Echelle / CD#2 @ 437nm / EEV
position (pixel)
intensity (ADU)
0
1000
2000
3000
0
2000
4000
6000
4637.250
4638.685
4641.253
4644.707
4646.686
4647.251
4650.234
4651.555
4651.989
4655.212
4657.940
4659.570
4663.202
4666.005
4666.798
4668.171
4669.984
4673.660
4676.055
4680.237
4680.646
4683.351
4686.194
4689.251
4690.622
4691.635
4694.091
4695.038

row #26 / order #99 / BLUE Echelle / CD#2 @ 437nm / EEV
intensity (ADU)
position (pixel)
0
2000
4000
6000
0
1000
2000
3000
4683.351
4686.194
4689.251
4690.622
4691.635
4694.091
4695.038
4695.454
4700.771
4702.316
4703.360
4703.989
4705.760
4706.251
4708.294
4712.481
4712.840
4720.458
4721.276
4721.620
4722.088
4723.438
4723.784
4724.772
4726.910
4728.133
4729.128
4732.080
4735.930
4739.676
4740.529
4740.952
4742.117
4743.687

intensity (ADU)
0
2000
4000
6000
position (pixel)
0
1000
2000
3000
row #27 / order #98 / BLUE Echelle / CD#2 @ 437nm / EEV
4726.910
4729.128
4732.080
4735.930
4739.676
4740.529
4740.952
4742.117
4743.687
4745.337
4749.200
4749.971
4752.414
4758.128
4764.346
4764.890
4765.595
4766.600
4773.241
4774.259
4775.794
4777.191
4778.294
4779.728
4783.861
4786.531
4787.148
4789.386

row #28 / order #97 / BLUE Echelle / CD#2 @ 437nm / EEV
intensity (ADU)
position (pixel)
6000
4000
2000
0
0
1000
2000
3000
4778.294
4783.861
4786.531
4787.148
4789.386
4793.244
4795.913
4806.070
4808.133
4809.614
4812.375
4813.007
4813.720
4813.896
4817.020
4819.193
4820.464
4820.884
4821.587
4822.854
4823.606
4823.996
4826.700
4829.797
4831.121
4831.597
4832.802
4833.178
4840.843
4843.941

row #29 / order #96 / BLUE Echelle / CD#2 @ 437nm / EEV
position (pixel)
intensity (ADU)
0
1000
2000
3000
0
2000
4000
6000
4826.700
4831.121
4831.597
4832.802
4833.178
4840.843
4843.941
4845.162
4848.362
4849.140
4850.439
4852.868
4858.332
4861.216
4861.717
4863.172
4865.477
4865.910
4867.590
4868.881
4871.289
4872.917
4874.364
4876.260
4878.009
4878.733
4879.900
4881.204
4882.250
4889.060

row #30 / order #95 / BLUE Echelle / CD#2 @ 437nm / EEV
position (pixel)
intensity (ADU)
0
1000
2000
3000
0
2000
4000
6000
4878.009
4878.733
4879.900
4881.204
4882.250
4887.947
4889.060
4889.490
4892.760
4893.445
4894.955
4899.240
4902.054
4902.770
4904.750
4910.156
4910.793
4911.378
4912.529
4919.815
4920.623
4921.613
4927.780
4929.086
4933.240
4933.852
4936.774
4937.829
4939.642
4943.064
4945.458

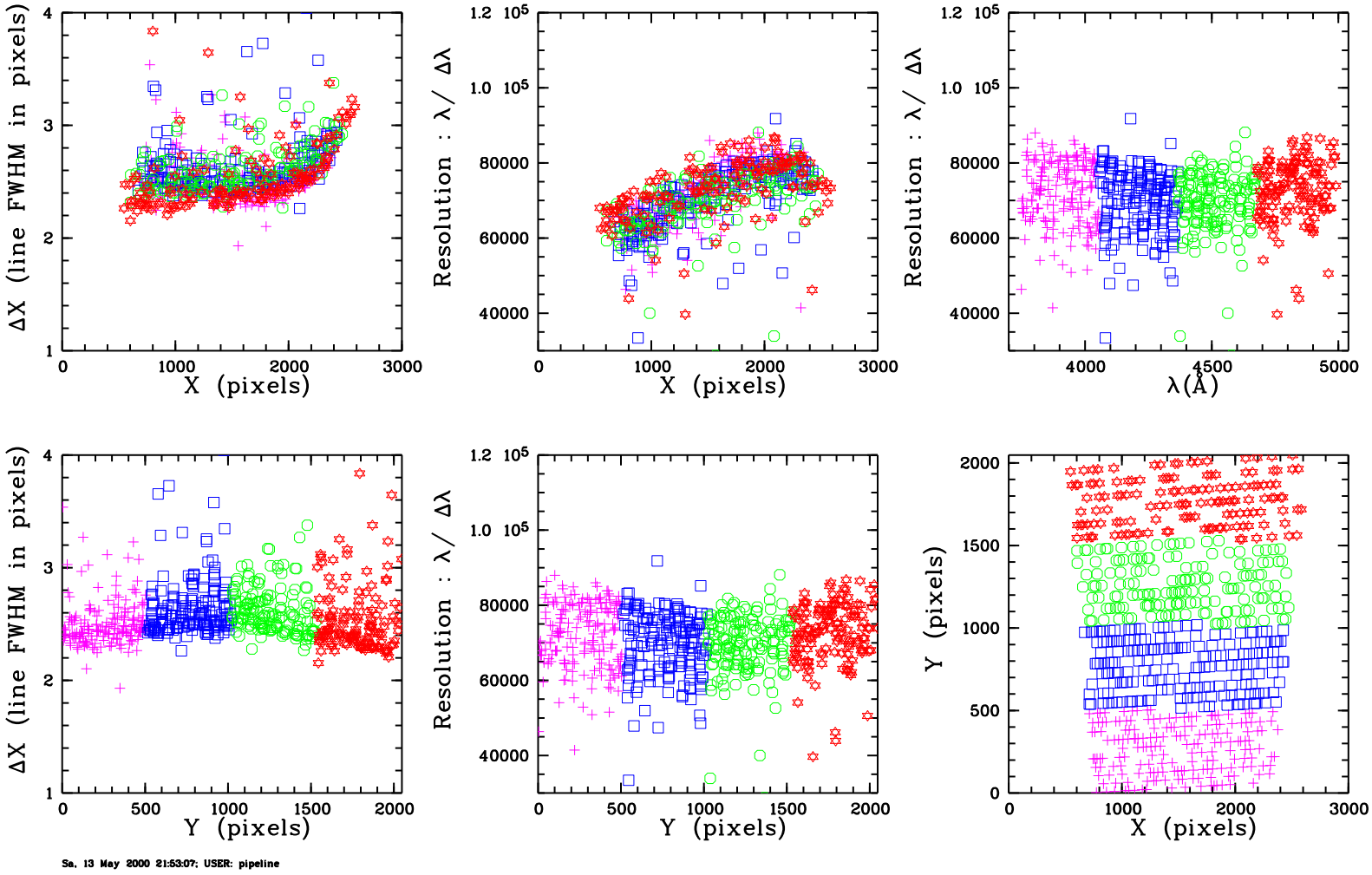
row #31 / order #94 / BLUE Echelle / CD#2 @ 437nm / EEV
intensity (ADU)
position (pixel)
6000
4000
2000
0
0
1000
2000
3000
4989.308
4985.372
4982.487
4980.186
4972.177
4970.063
4968.755
4965.731
4965.120
4961.726
4960.423
4950.626
4946.663
4945.458
4943.064
4939.642
4937.829
4936.774
4933.240

Central wavelength: 437.0 nm, slit: 0.5 arcsec, CCD: EEV, 9.9 °C

Filename : UVES_BLUE_CAL134.1.fits, Observ. date: 2000-05-13T20:29:54

Median(DX) = 2.519 pix , Mean(DX) = 2.6 pix , σ(DX) = 0.5 pix

Median(RES) = 71884.969 , Mean(RES) = 70587.602 , σ(RES) = 9688.4



Sa, 13 May 2000 21:53:07; USER: pipeline