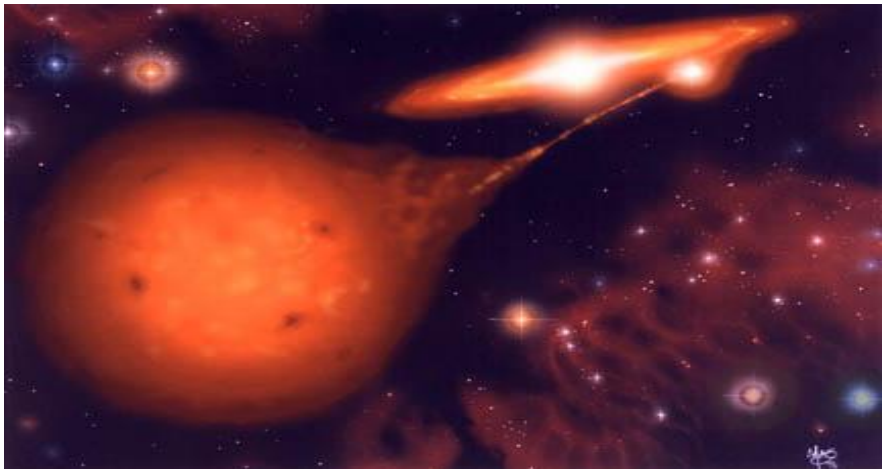
Spectroscopy of RZ LMi

Wild Stars in the Old West II, Tucson AZ



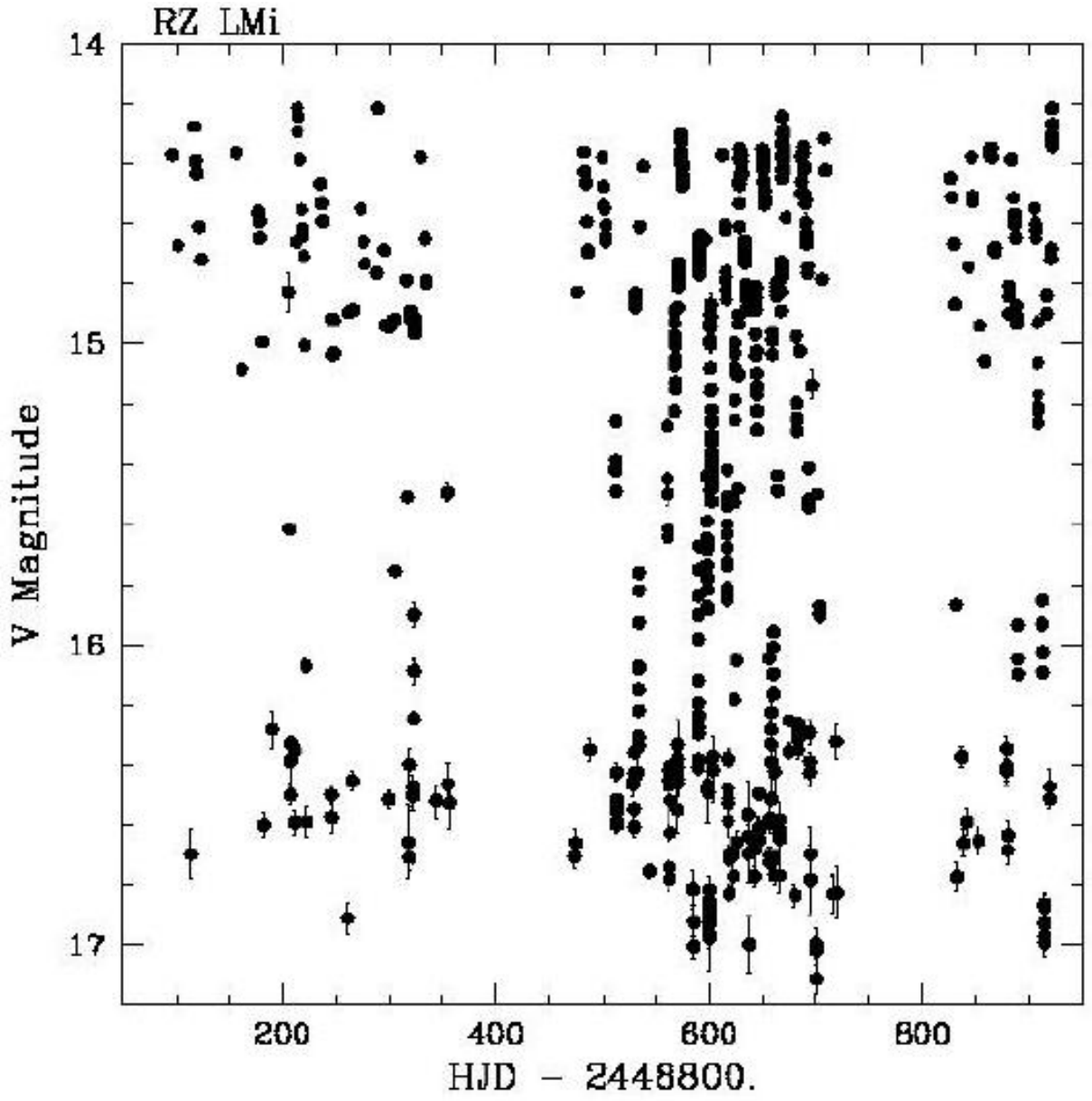
Jeff W. Robertson - Arkansas Tech University

Supershort Superoutburst Recurrence Times

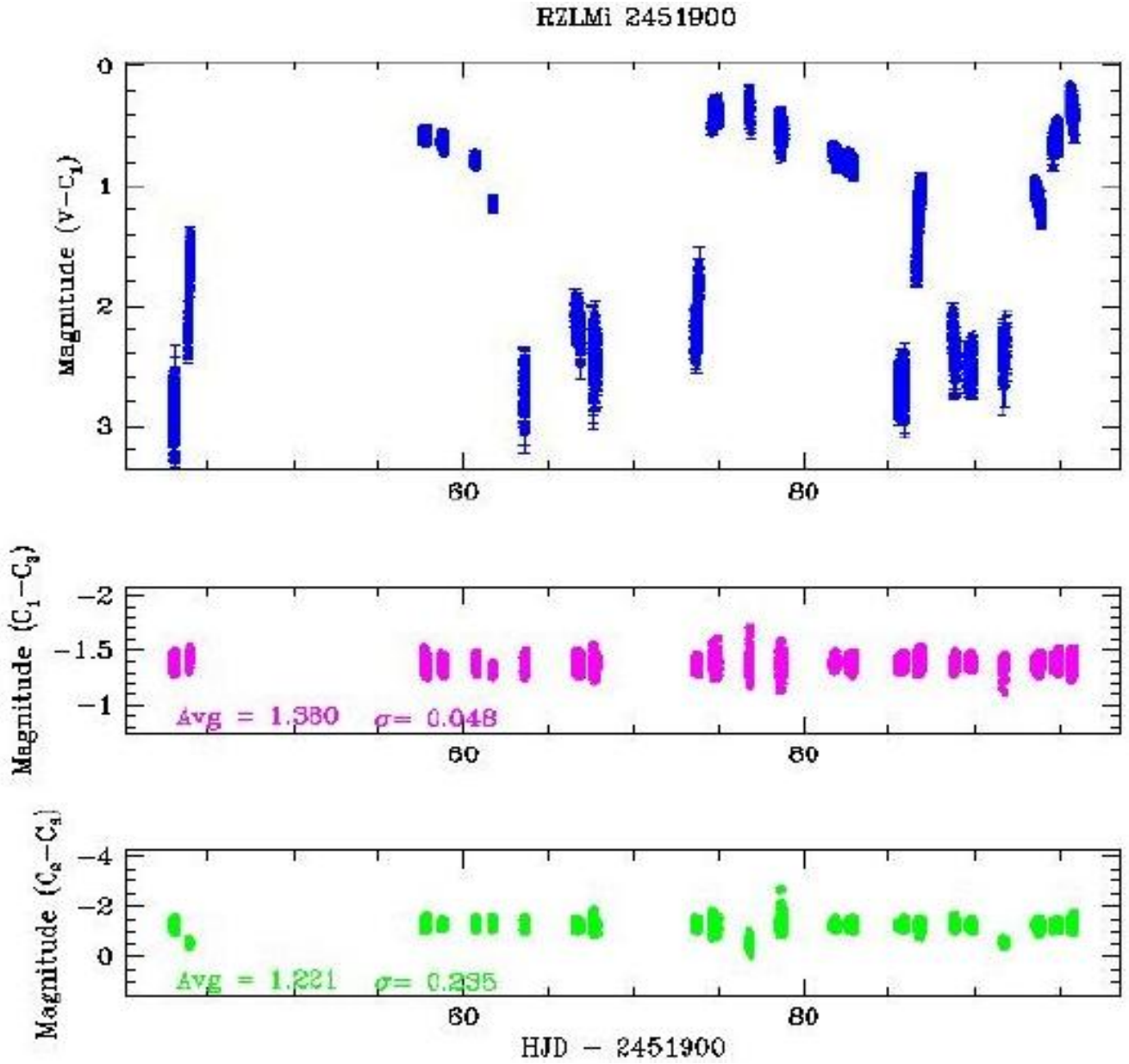
Hyperactive SU UMa-type dwarf nova.

Known systems.

- ER UMa
- RZ LMi
- V1159 Ori
- DI UMa
- SX LMi



RZ LMi Is THE Most Active SU UMa



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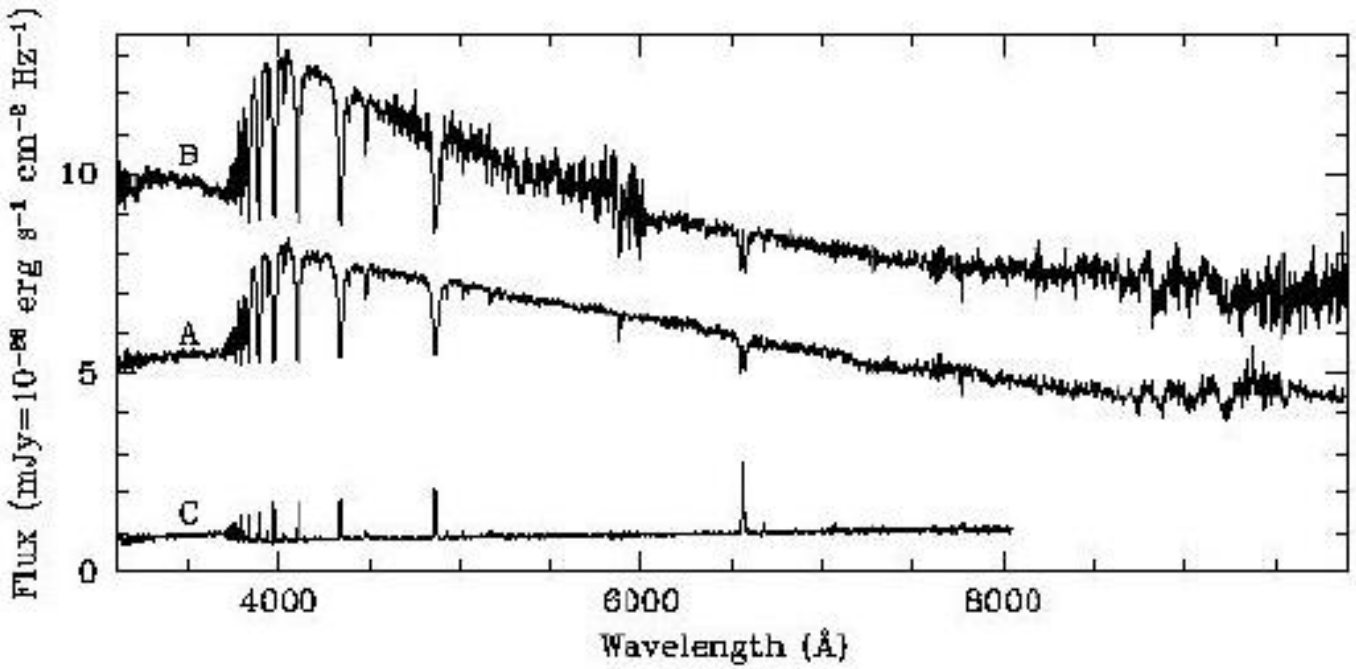
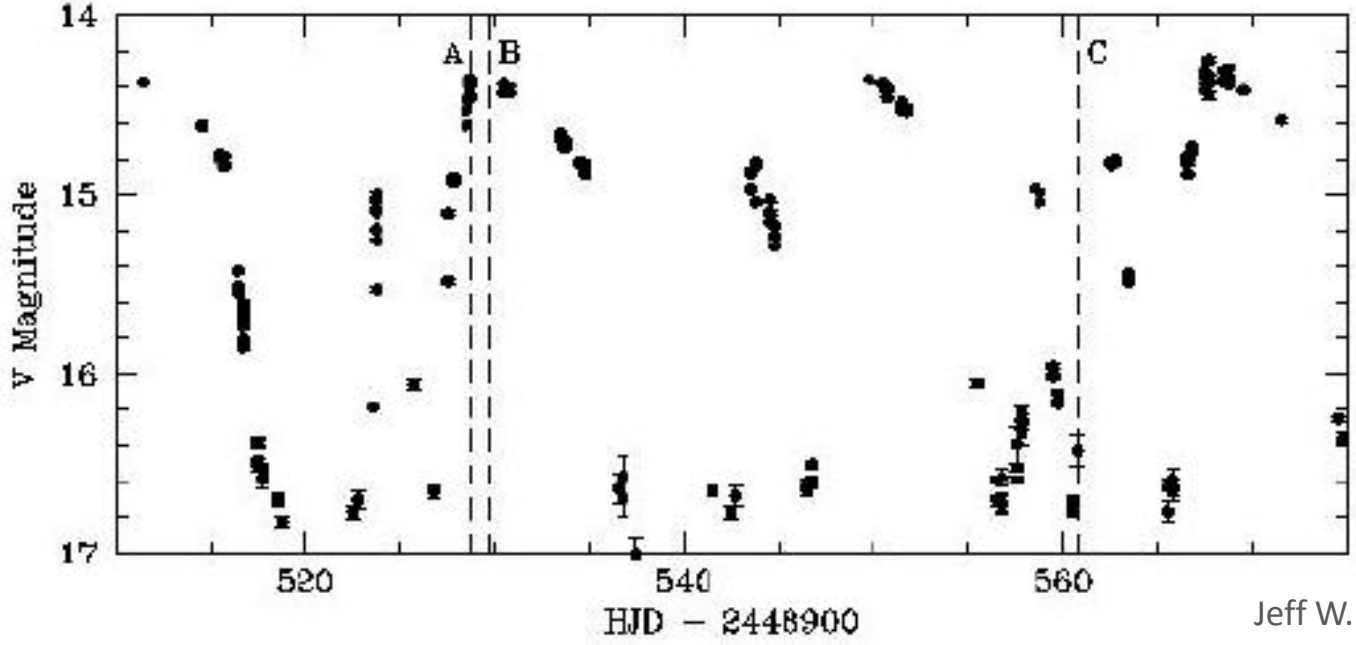
RZ LMi





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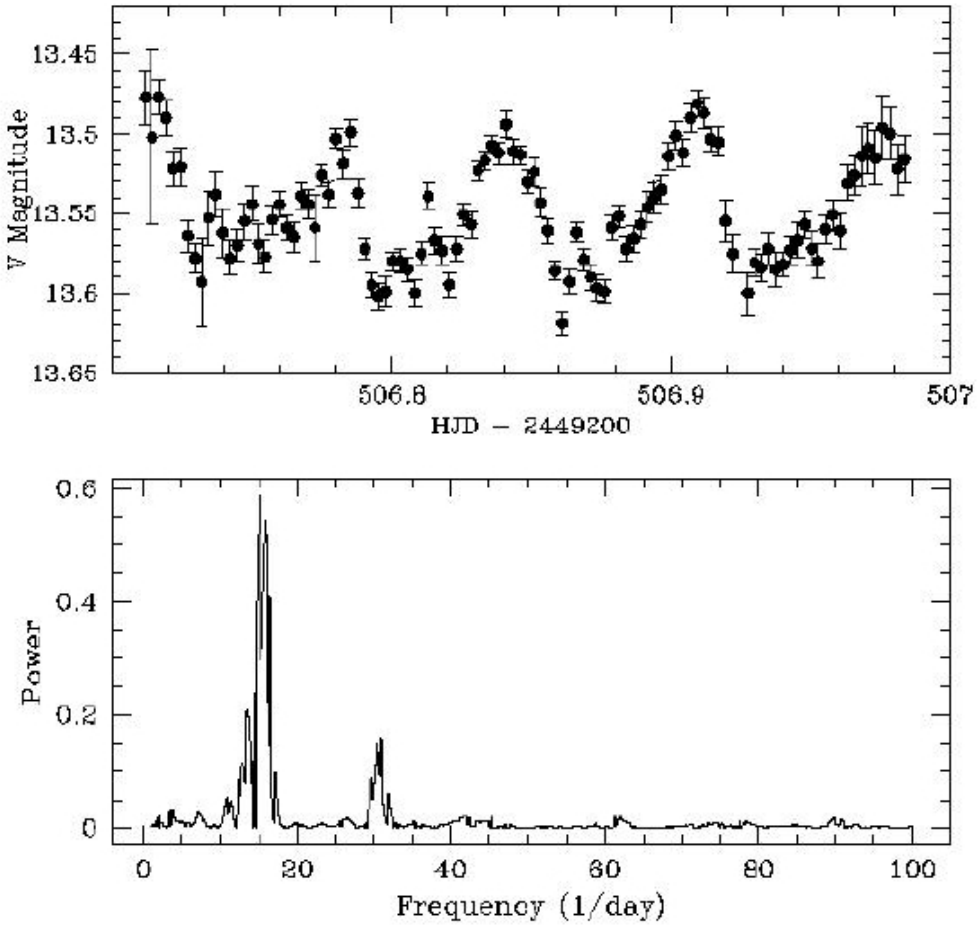
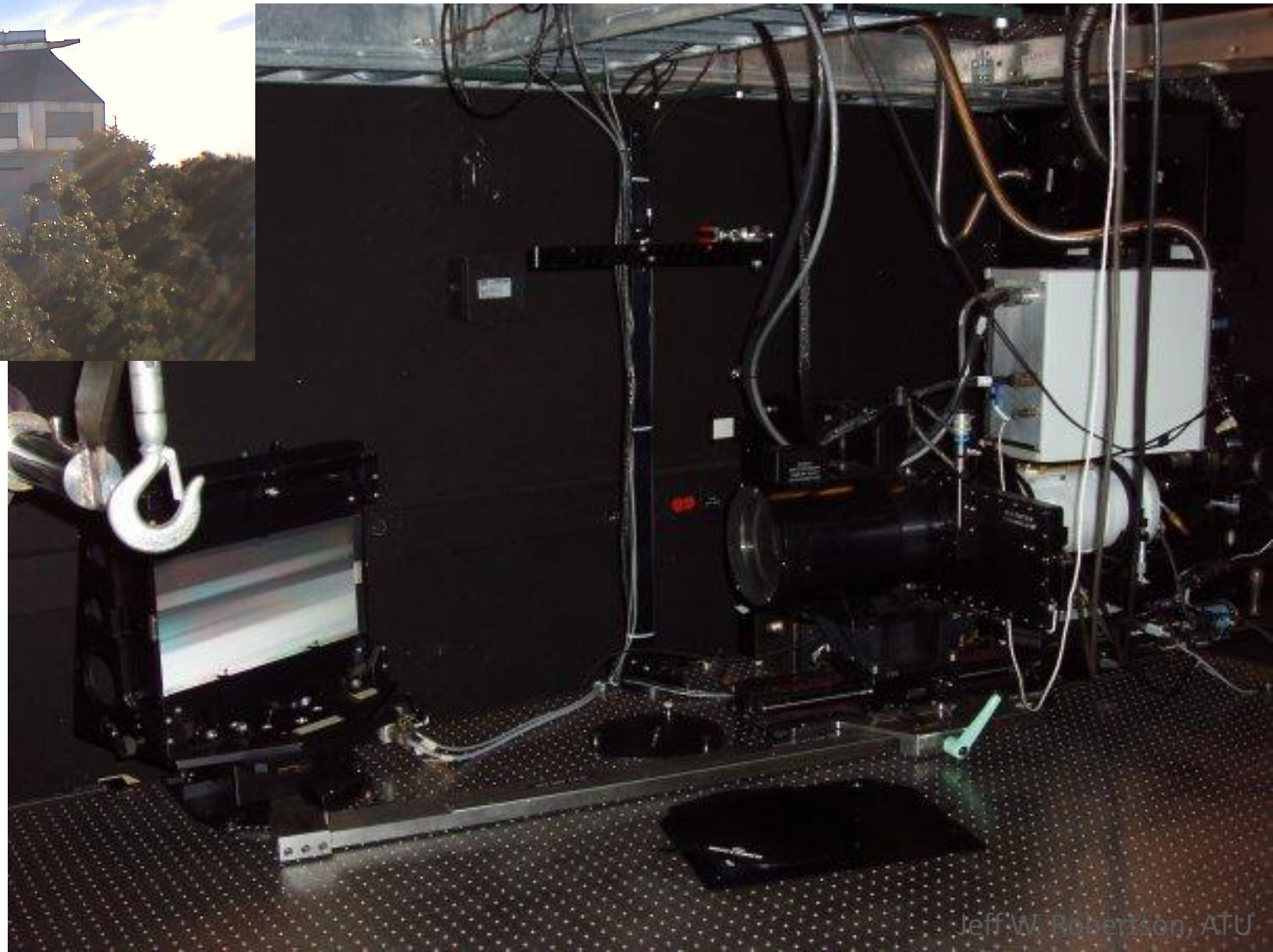
Observations and photometric analysis to date has yet to reveal anything other than superhumps…

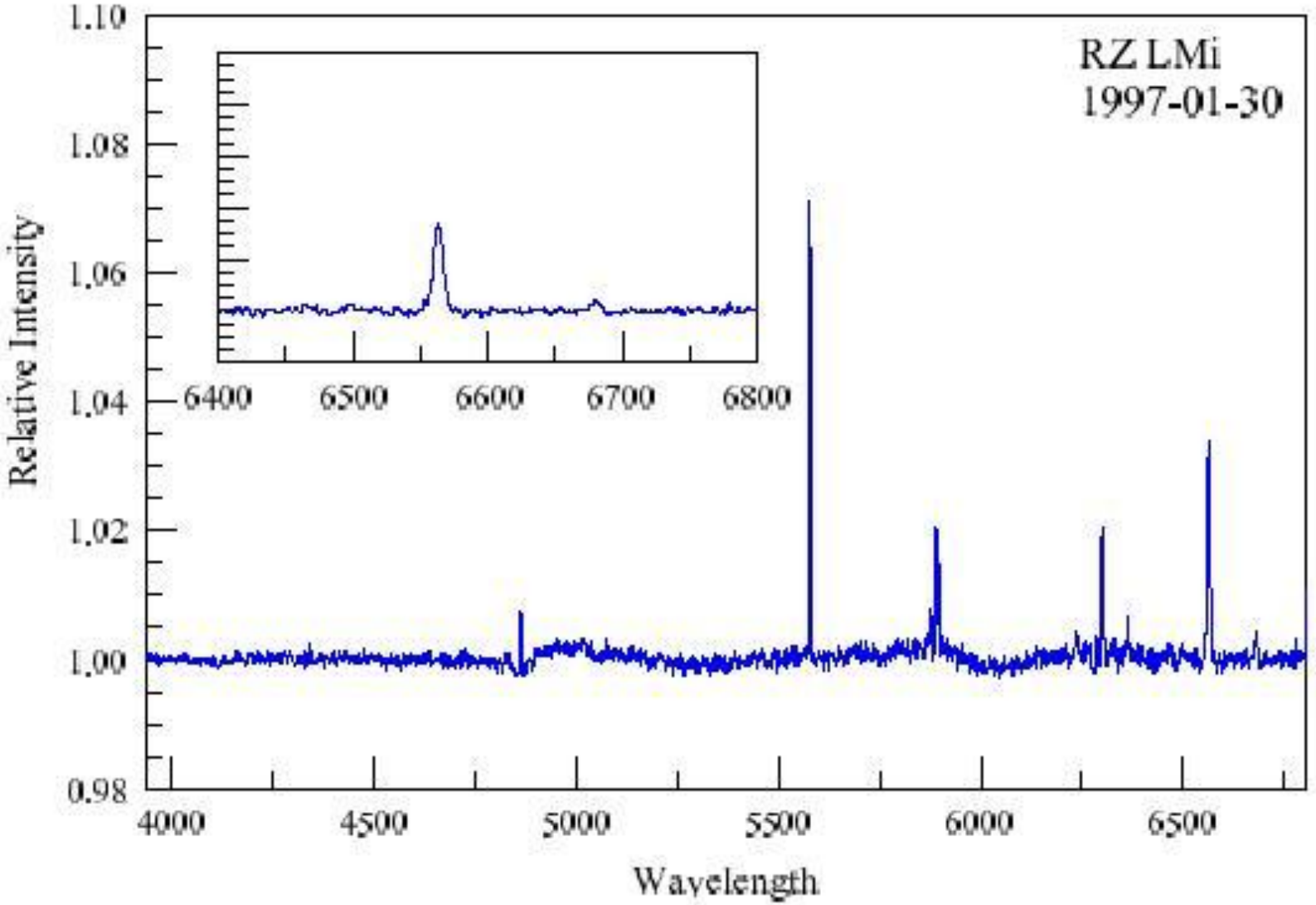


even after an exhaustive CBA campaign in 2001, designed to determine Porb, RZ LMi would not reveal an orbital period.

RZ LMi
WIYN -Hydra/MOS (8 minute integrations)



RZ LMi 1997 01 30 Night Median



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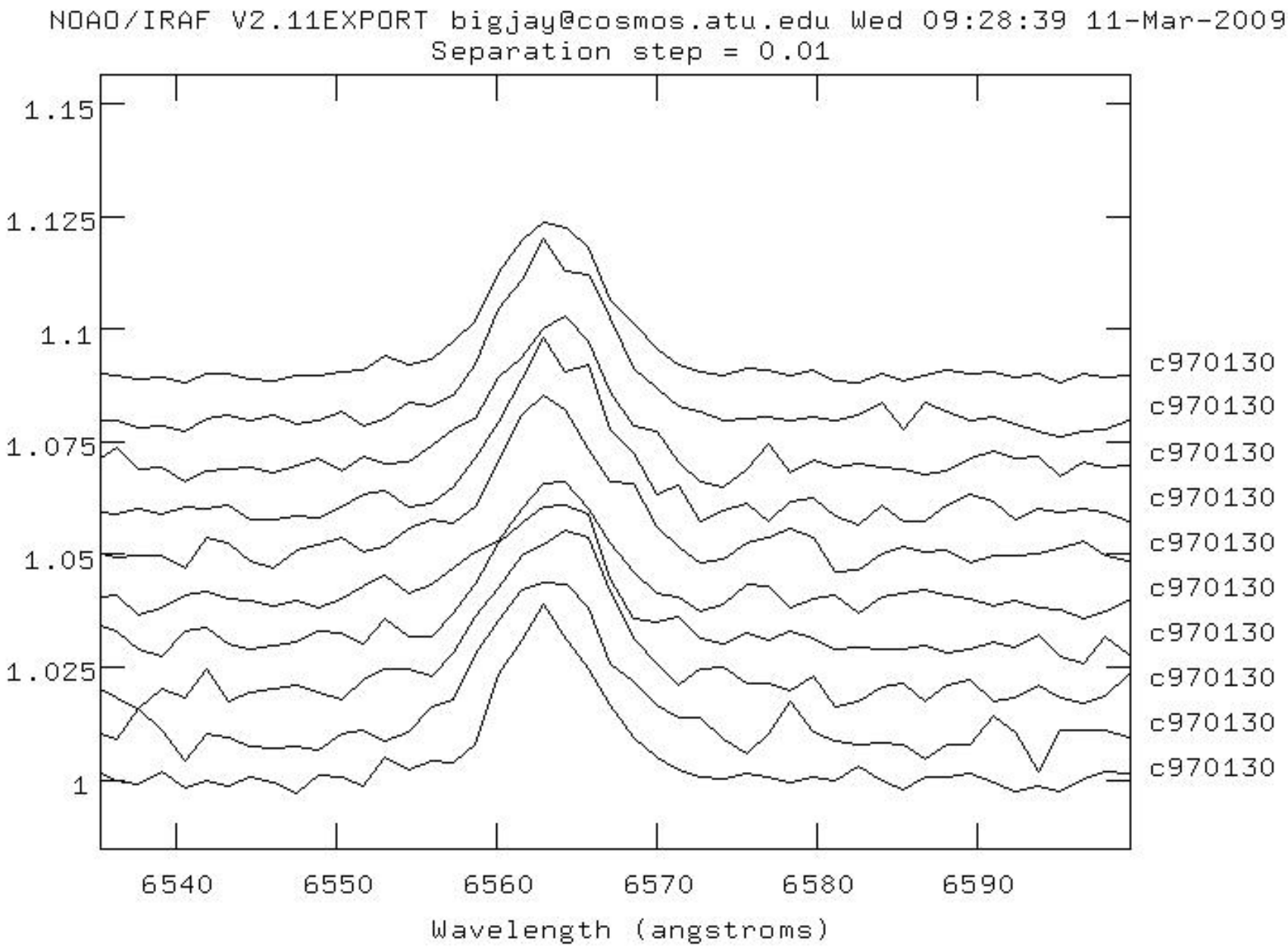
RZ LMi 1997 01 30



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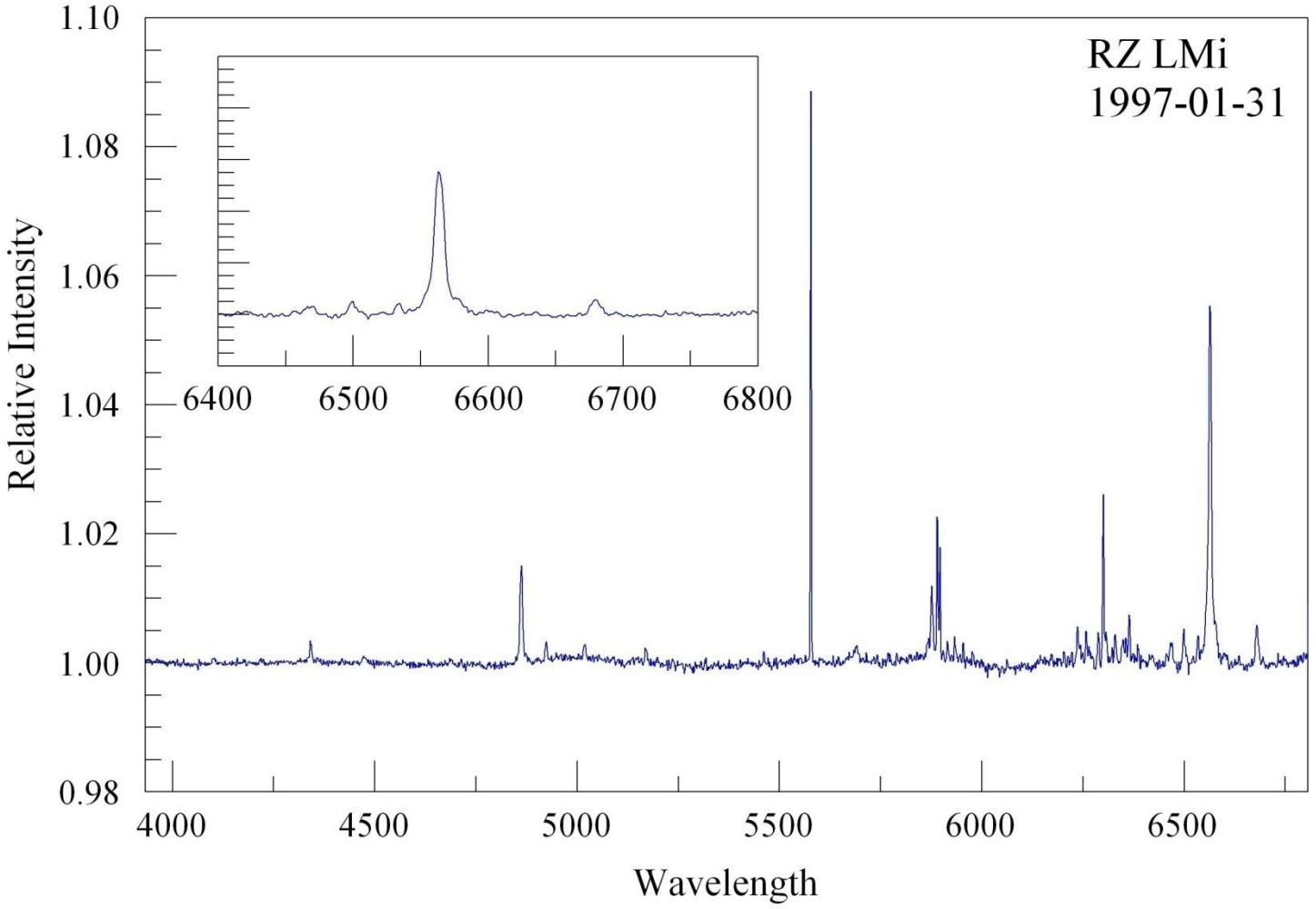
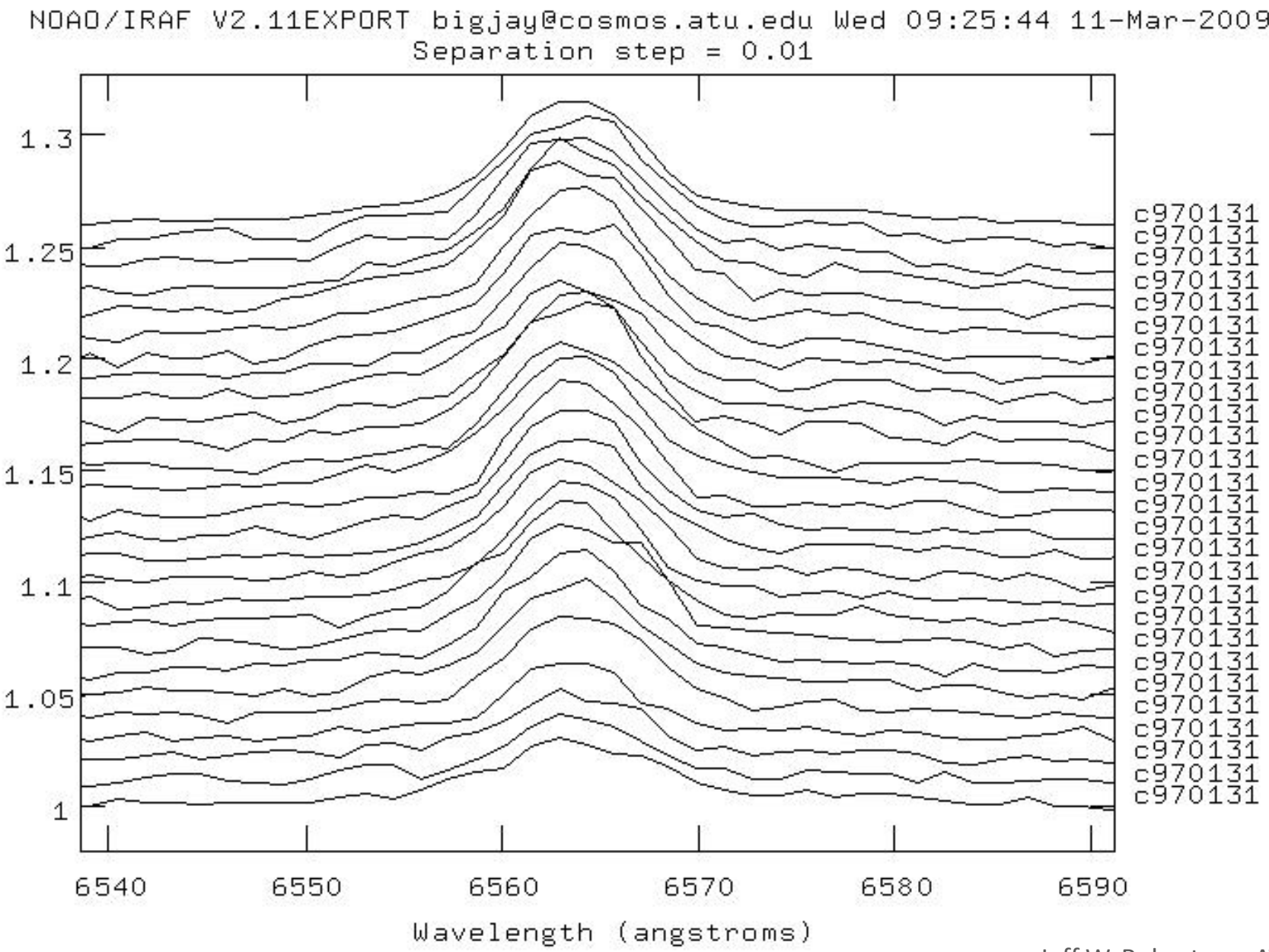
RZ LMi 1997 01 31 Night Median



RZ LMi 1997 01 31



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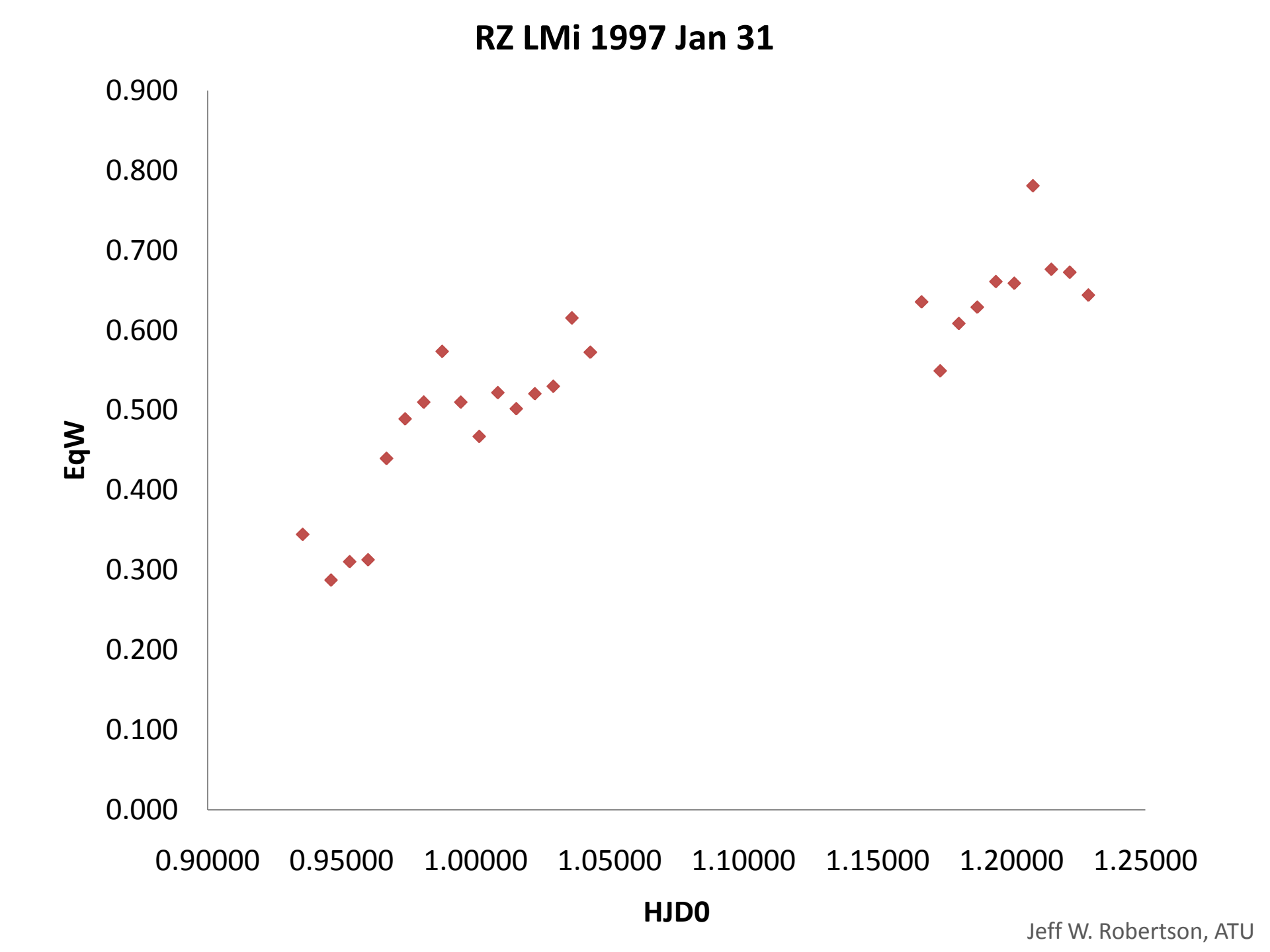
RZ LMi 1997 Jan 31
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
EqW
0.90000
0.95000
1.00000
1.05000
1.10000
1.15000
1.20000
1.25000
HJD0
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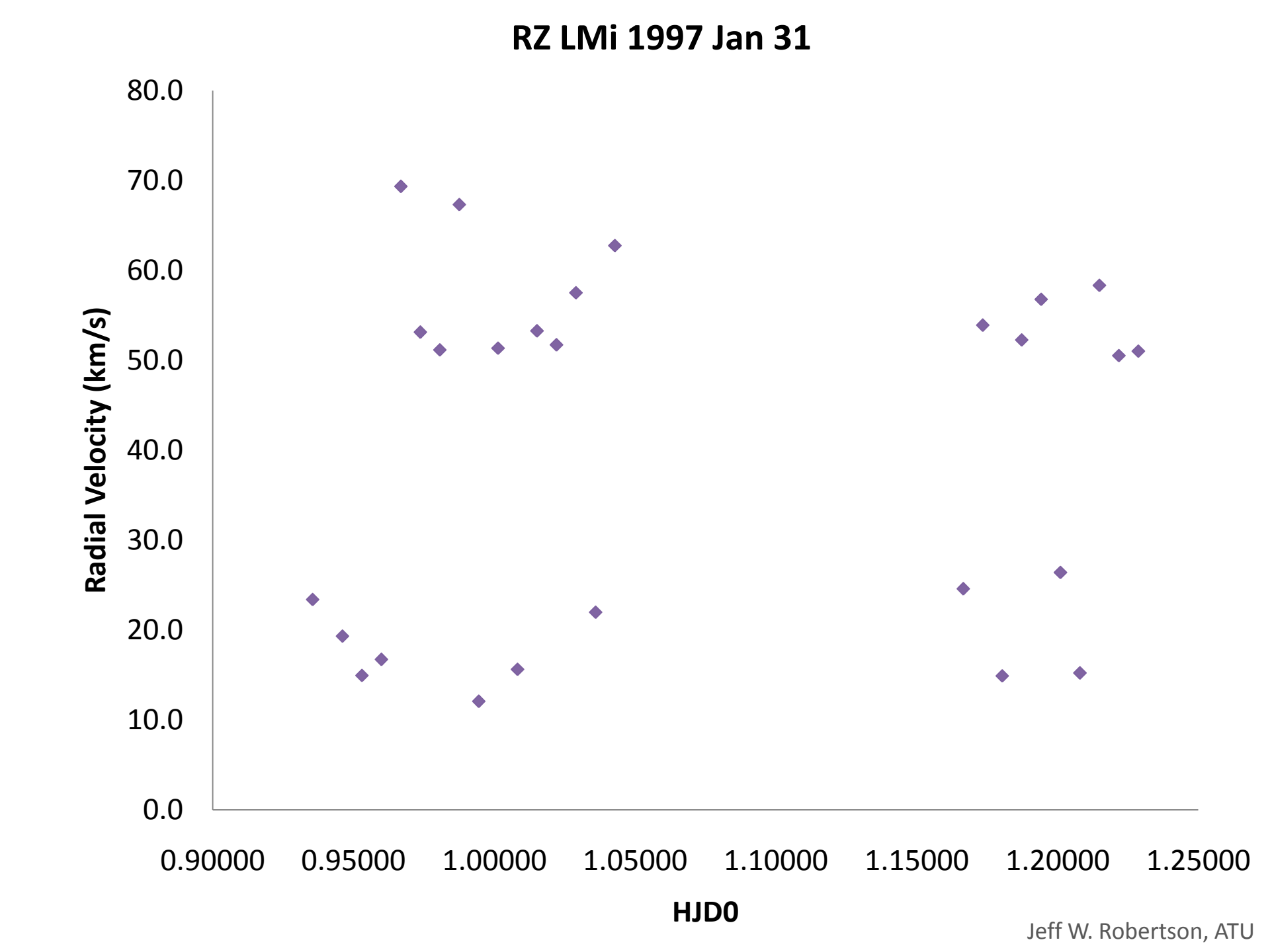
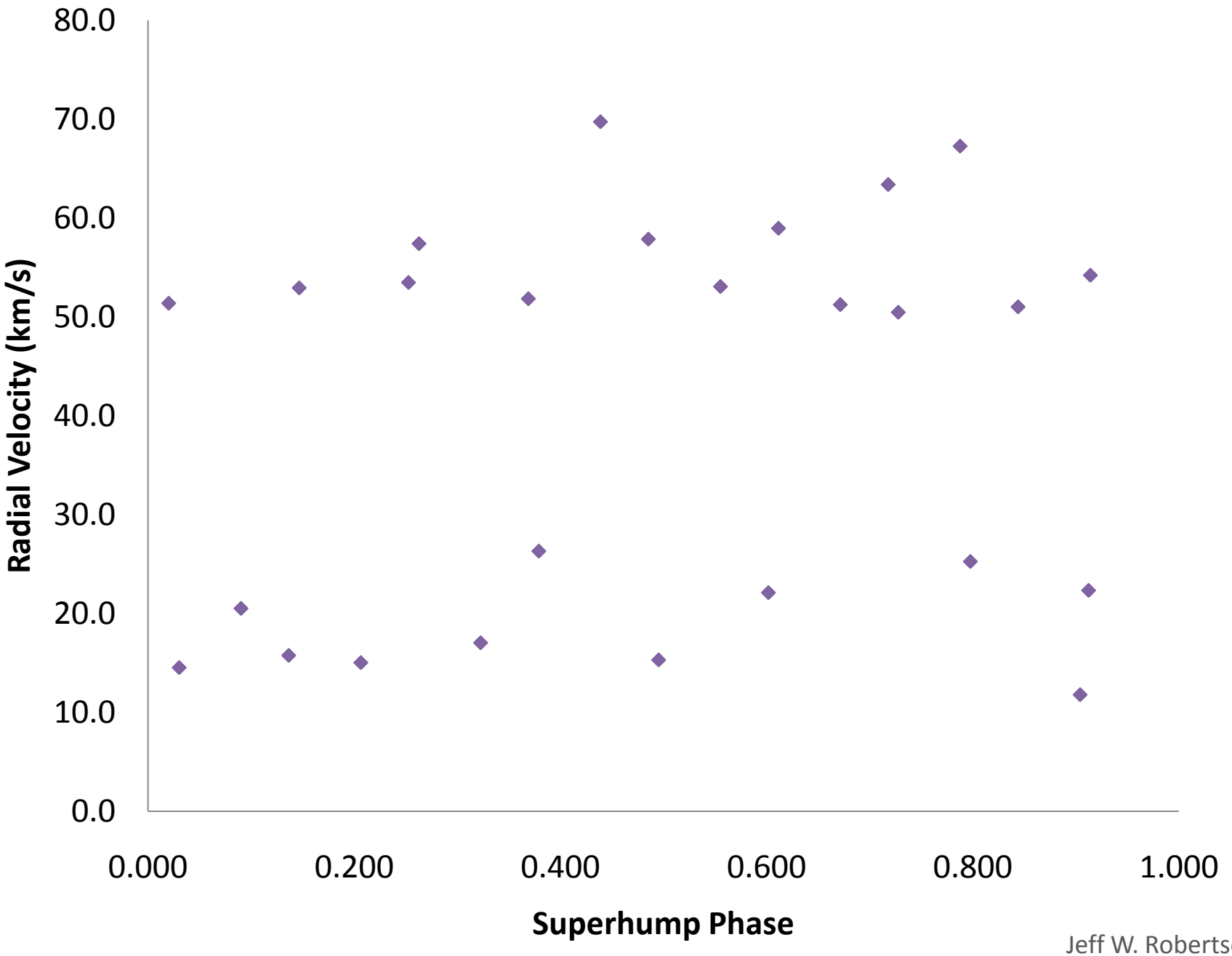
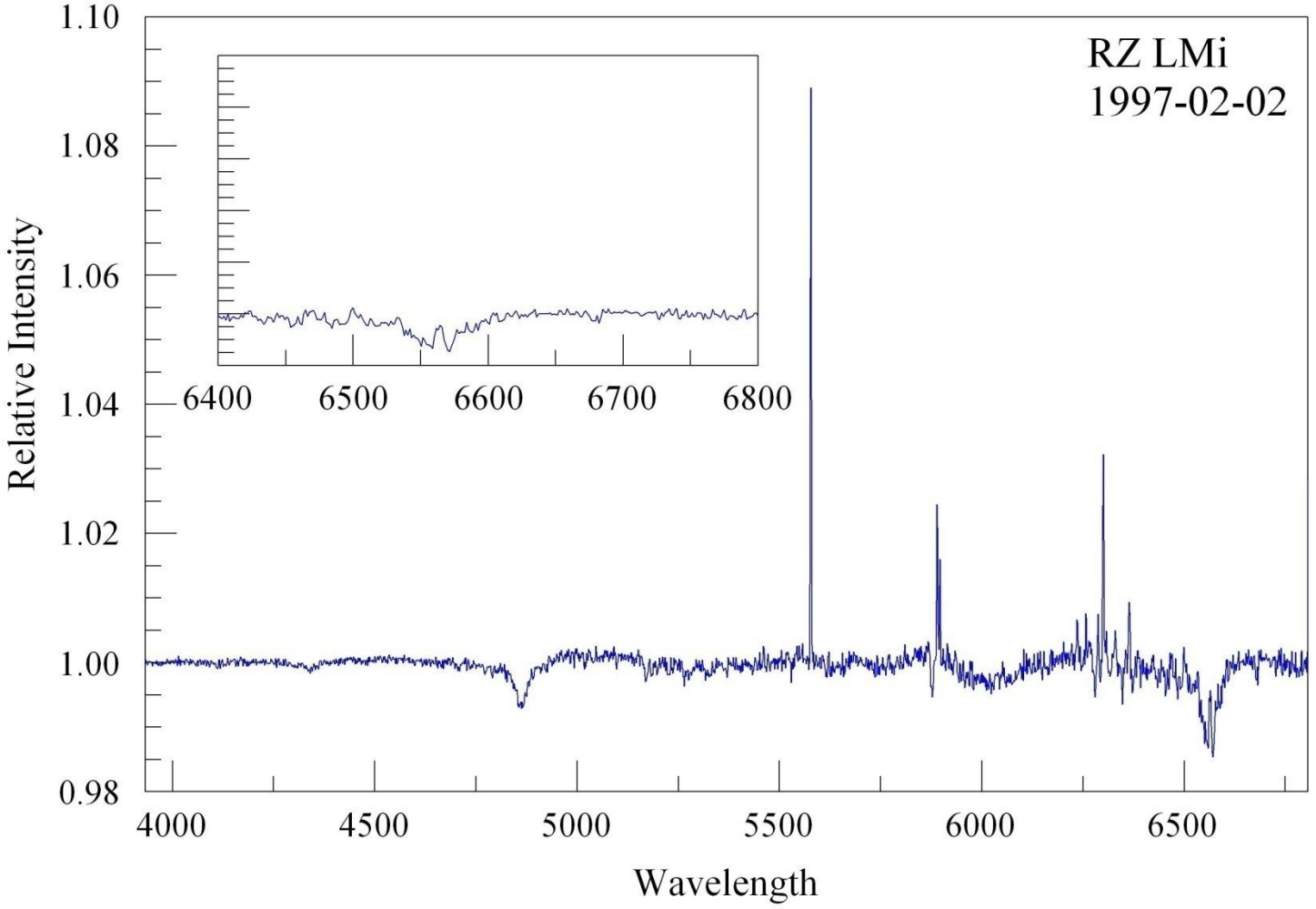
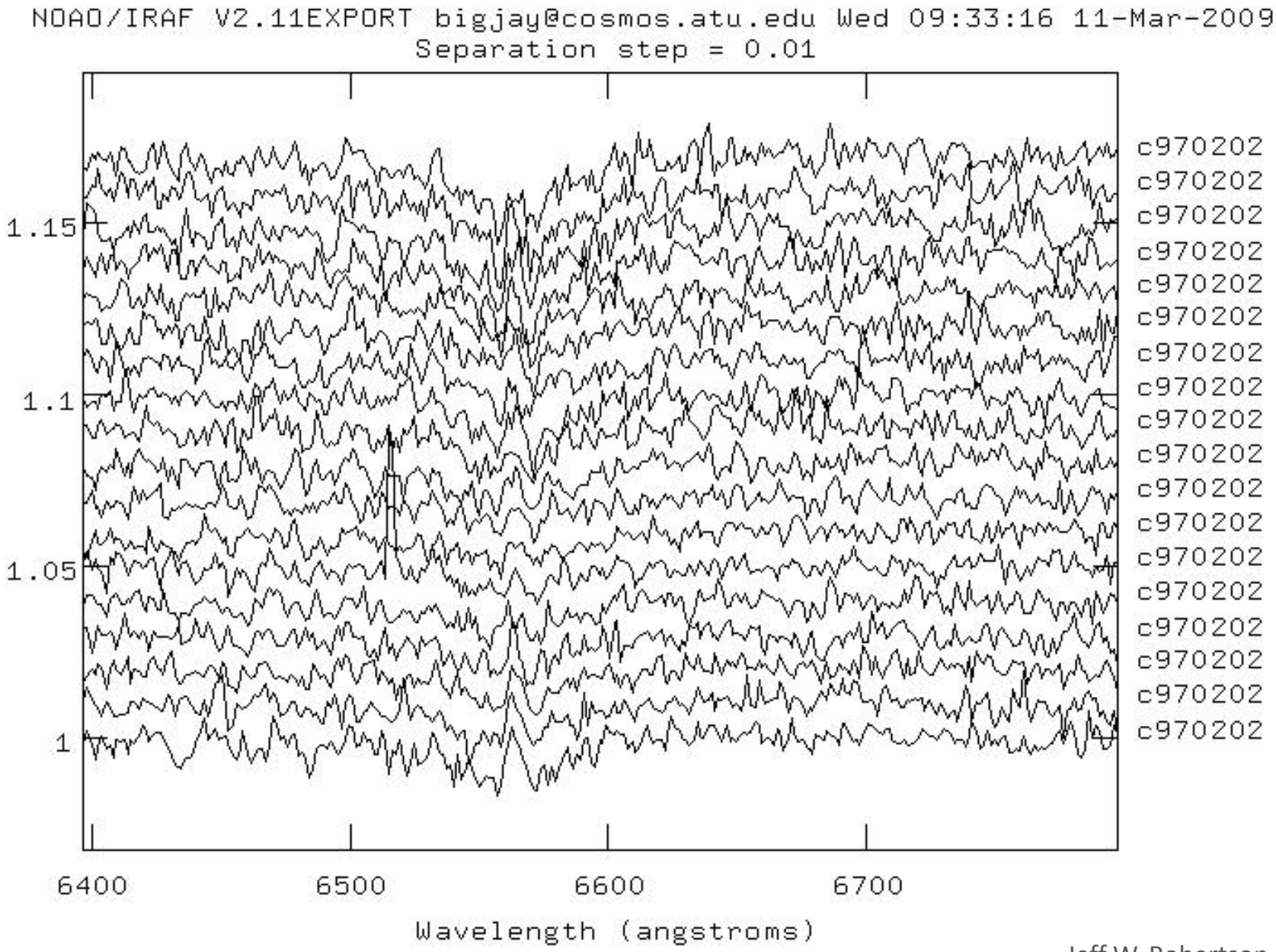

RZ LMi 1997 Jan 31
Radial Velocity (km/s)
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
0.90000
0.95000
1.00000
1.05000
1.10000
1.15000
1.20000
1.25000
HJD0
Jeff W. Robertson, ATU


RZ LMi 1997 Jan 31
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Radial Velocity (km/s)
0.000
0.200
0.400
0.600
0.800
1.000
Superhump Phase
Jeff W. Robertson, ATU

RZ LMi 1997 02 02 Night Median



RZ LMi 1997 02 02



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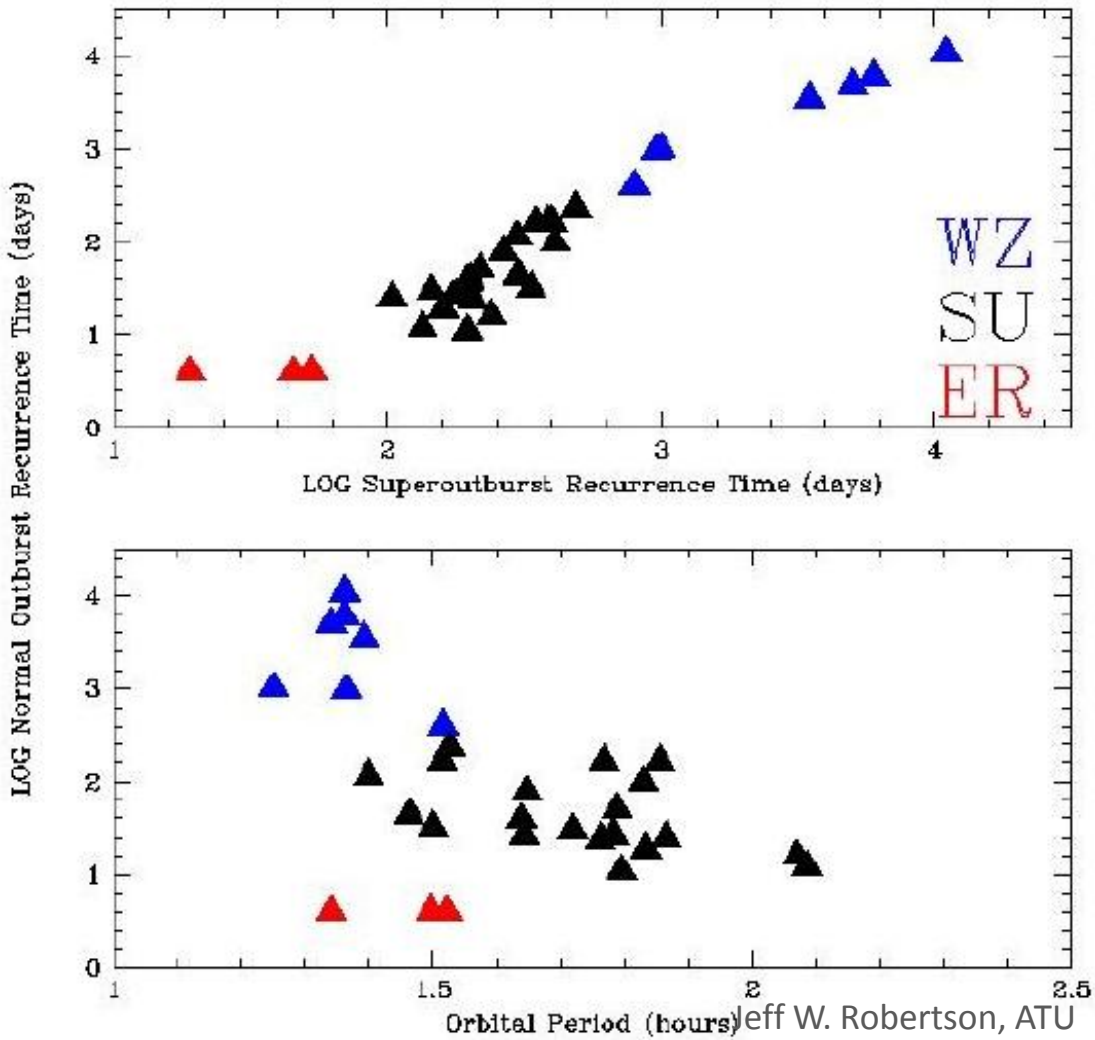
RZ LMi

The most widely discrepant outburst (mass-transfer) behaviors occur among SU UMa systems that have the same orbital periods.

The high mass-transfer rates surely are tied in some way with the evolutionary transition of the secondary from normal dwarf to degenerate object.



RZ LMi Evolutionary Status

No radial velocity variations found to help establish P_{orb}.

Why is it so difficult to add one more data point to a telling plot?!

- Low inclination – emission lines suggest likely
- Extreme mass ratio? Both?