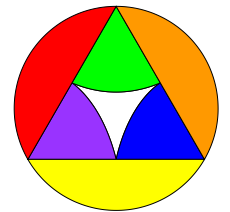


# BeSS Workshop

## Spectra of Be stars



**Contribution to the BeSS database:  
Only low resolution spectra made with the Czerny  
Turner Self Guides Spectroscope of the Santa  
Barbara Instrument Group:**

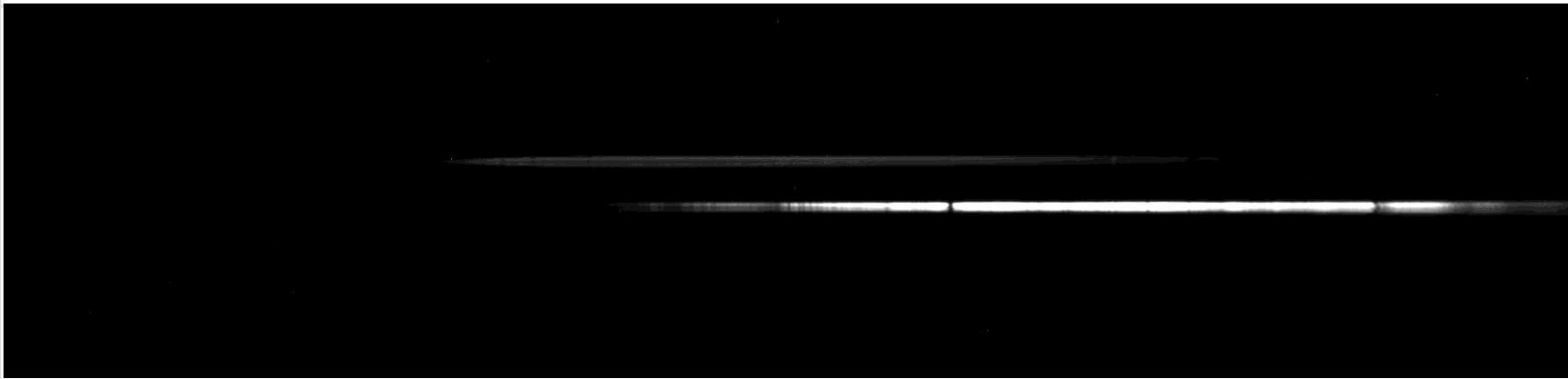
**Gam Cas  
Alcyone  
Bet Lyr**

**Observations of Be stars, not yet submitted  
to the BeSS database.**

**(Co-ownership with Guy Wauters of UGent,  
various types of equipment,  
quality of the spectra)**

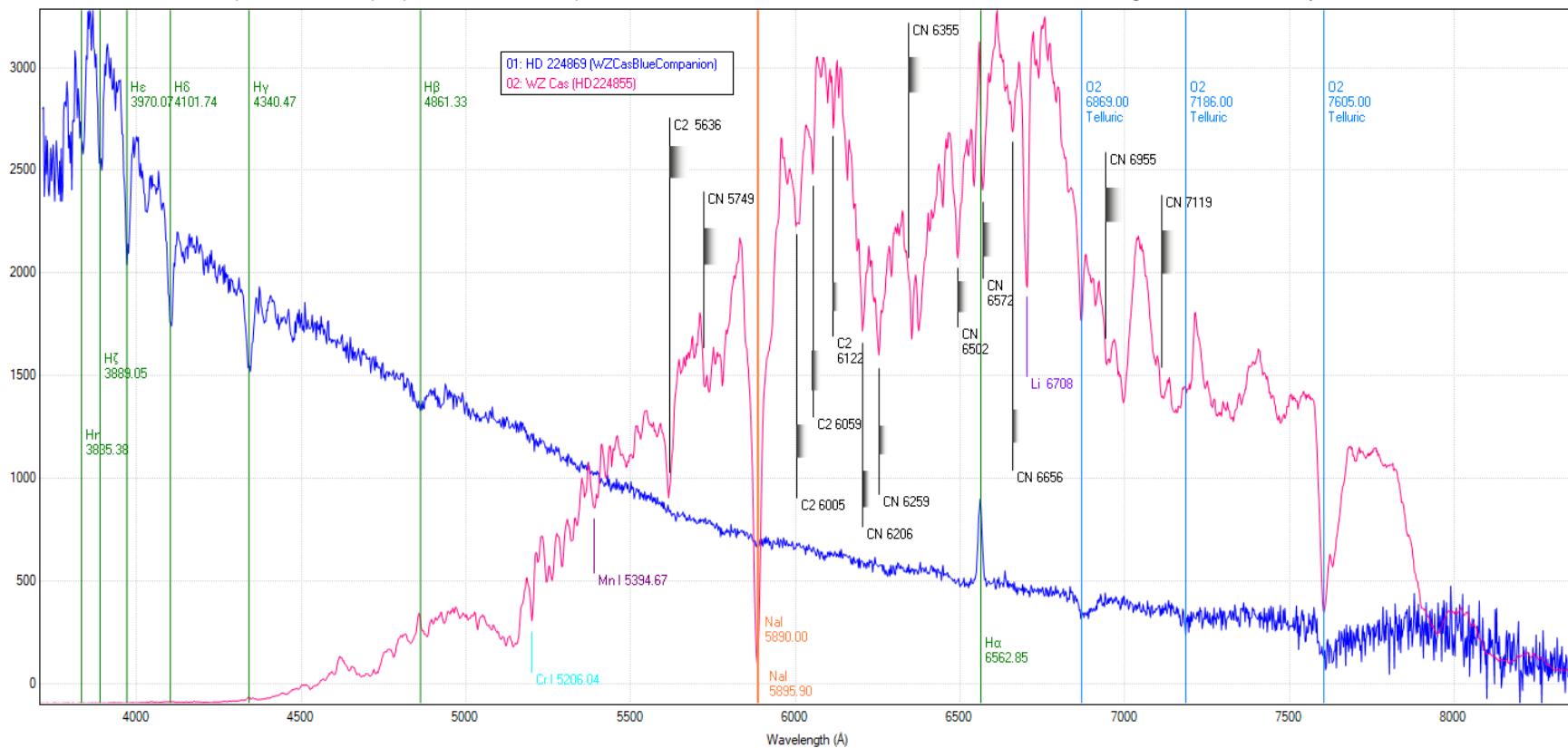


## BeSS Workshop - Observatoire de Paris

- 
- **The goal was to make a spectrum of a Carbon star WZ Cas.**
  - **At the same time, a second star could be placed on the slit of the Alpy600. This star, HD224869 (Mag 8.33) is an emission star. It was and is not (yet) in the BeSS database.**
  - **A new discovery? NO. It is known in Simbad as an emission star. It is not a classical Be star.**

# BeSS Workshop - Observatoire de Paris

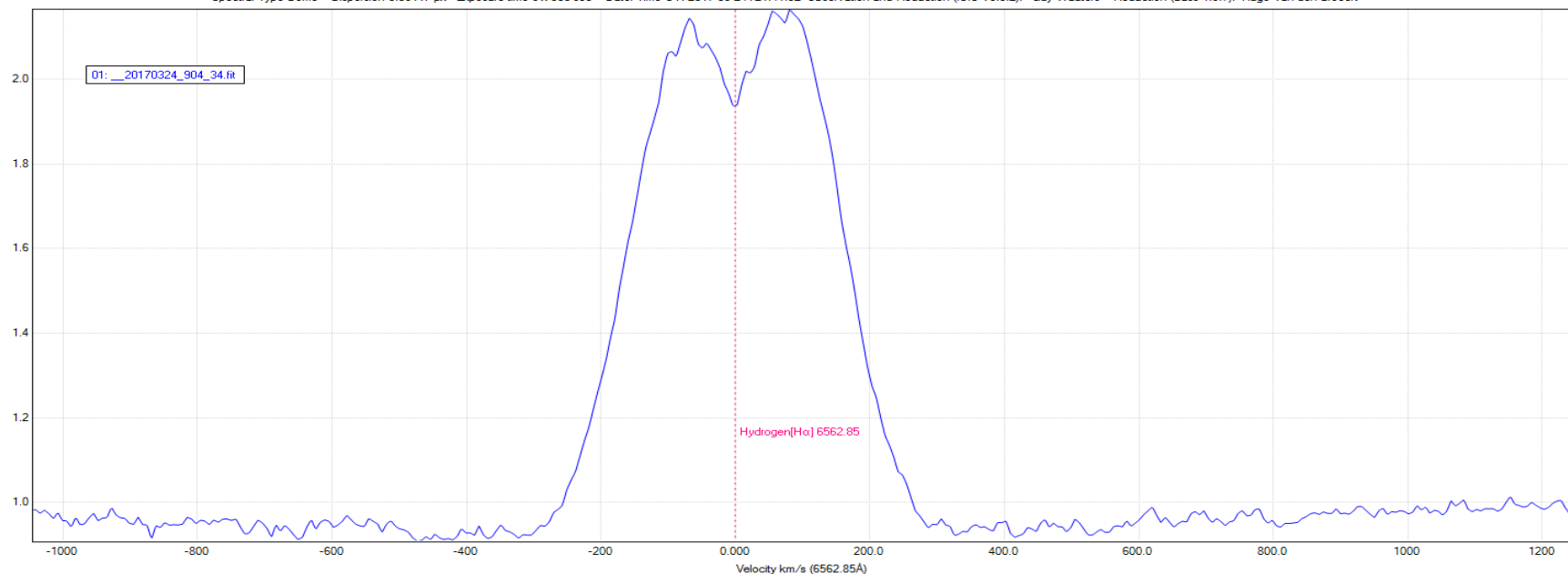
WZ Cas (HD224855) Spectral Type: C II (Carbon star) Magnitude: 6.5 to 8.5 (Variable) Period: 186 days Spectroscopie Alpy 600 Camera ATIK460EX Telescope Cassegrain 0.4 meter  
Dispersion = 2.35864009 Å / px Exposure Time 120 sec CCD Temperature -10.44°C Star Altitude 54° 40' Date/Time UT: 2017-01-19T20:01:28.269 Data Reduction: Hugo Van den Broeck Observer: Guy Wauters



BASS Project 1.9 Beta 32d4

# BeSS Workshop - Observatoire de Paris

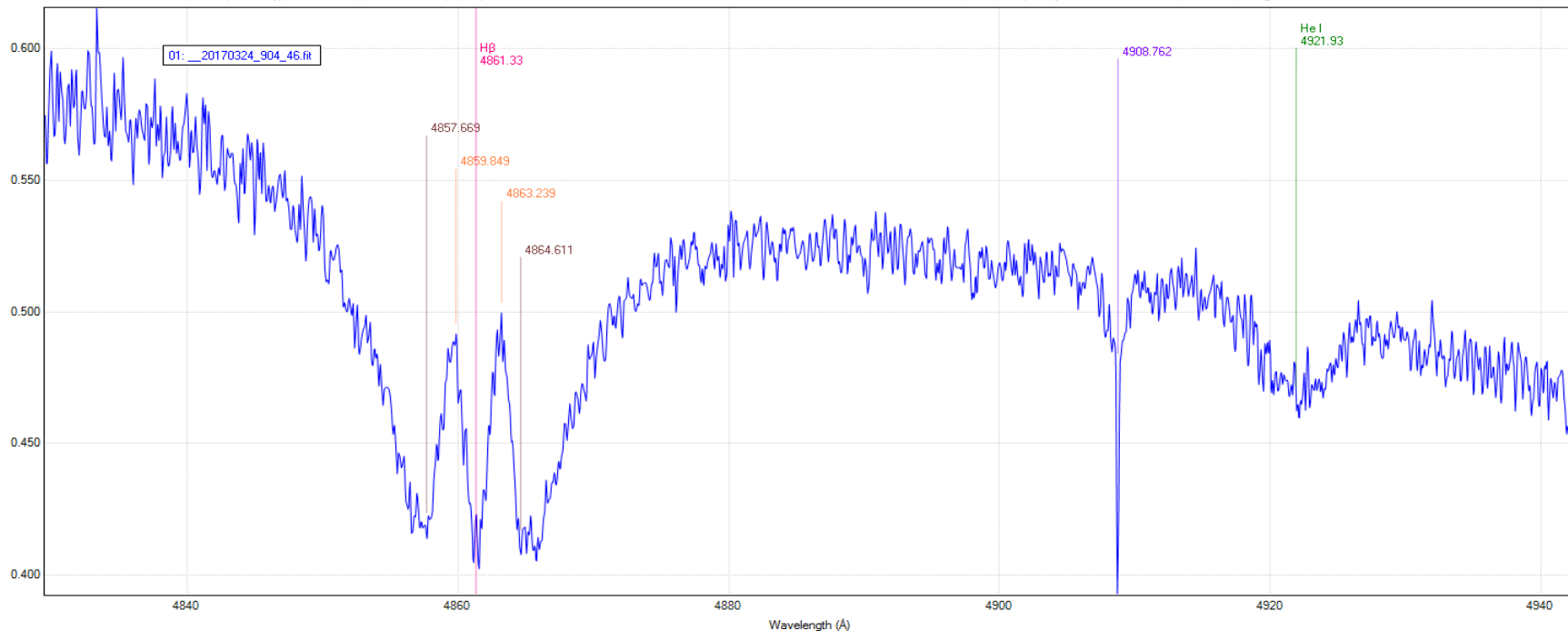
Kappa Draconis eShel 34<sup>th</sup> order Telescope 0.4 meter Cassegrain f/4 Spectroscopie Shelyak eShel Imaging Camera ATIK-460EX Guiding Camera ATIK 314L+ March 24 2017 Location UGent S9 Ghent Belgium  
Spectral Type B6IIIe Dispersion 0.05 Å / px Exposure time 3 x 300 sec Date/Time UT: 2017-03-24T21:41:32 Observation and Reduction (ISIS V5.5.2): Guy Wauters Reduction (Bass 1.9.7): Hugo Van den Broeck



- **H-Alpha emission line of Kappa Draconis (HD109387). (eShel spectra 34th order)**

# BeSS Workshop - Observatoire de Paris

Kappa Draconis eShel 46<sup>th</sup> order Telescope 0.4 meter Cassegrain f/4 Spectroscopie Shelyak eShel Imaging Camera ATIK-460EX Guiding Camera ATIK 314L+ March 24 2017 Location UGent S9 Ghent Belgium  
Spectral Type B6IIIe Dispersion 0.05 Å / px Exposure time 3 x 300 sec Date/Time UT: 2017-03-24T21:41:32 Observation and Reduction (ISIS V5.5.2): Guy Wauters Reduction (Bass 1.9.7): Hugo Van den Broeck



BASS Project 1.9.7.2016

**H-Beta line of Kappa Draconis (HD109387).  
(eShel spectra 46th order)**



## BeSS Workshop - Observatoire de Paris

**All observations are collected in a small database. Available in .PDF and 1D (Measuring tool online or download)**

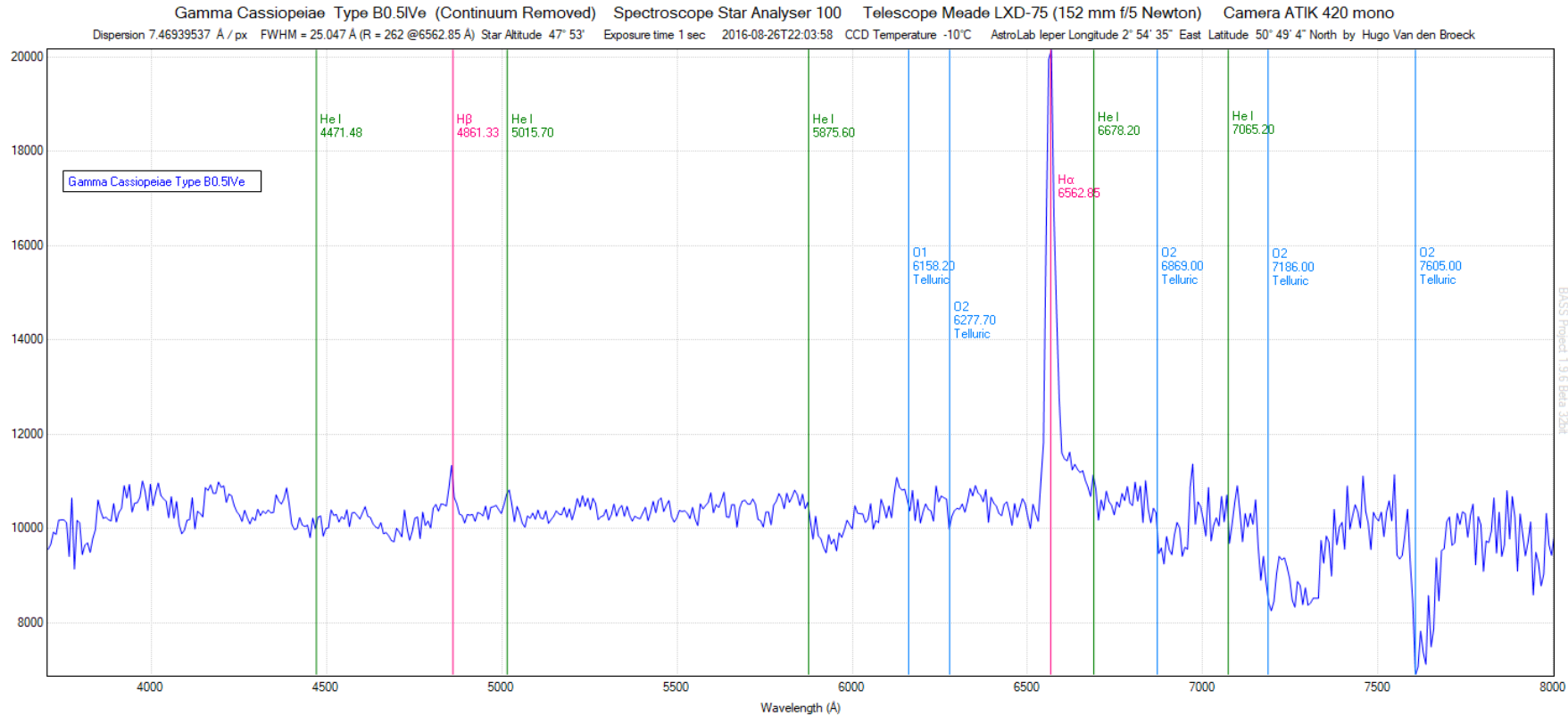
<http://www.observatory.ugent.be/observatory/spectra.html>

### **Spectra of Be stars:**

- **Gam Cas (Alpy, SGS, SA100)**
- **HD224869 (Alpy)**
- **48 Per (Alpy)**
- **Eta Tau (Alpy)**
- **17 Tau (Alpy)**
- **23 Tau (Alpy)**
- **Omi And (Alpy)**
- **28 Tau (Alpy)**
- **10 Cas (Alpy)**



# BeSS Workshop - Observatoire de Paris

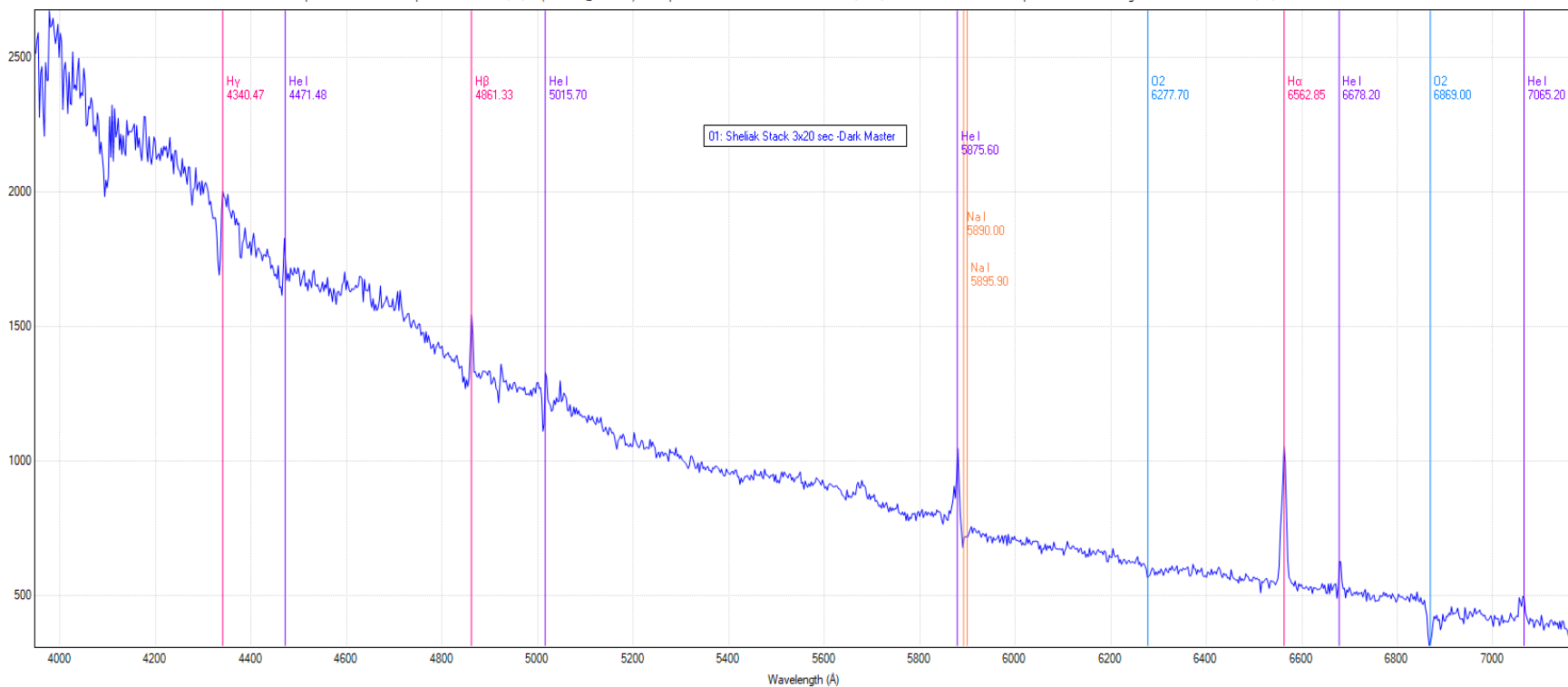


BeSS Project 1.9.5 Beta 324

## Gam Cas Star Analyser 100 150 years after Angelo Secchi

# BeSS Workshop - Observatoire de Paris

Beta Lyrae (Sheliak) Spectral Type B7Ve Spectroscopie LISA Telescope C11 + NO Focal Reducer Exposure timer 3 x 20 sec. (-Dark Master) Science Camera: ATIK314 L+ (CCD temp -10°C)  
Dispersion 2.57757748 Å / px FWHM: 10.707Å (R = 613 @6563.2Å) 4.1541px SNR: 4.5579 DATE-TIME UT: 2017-10-12T19:49:35 Instrument response corrected Hugo Van den Broeck 12/10/2017



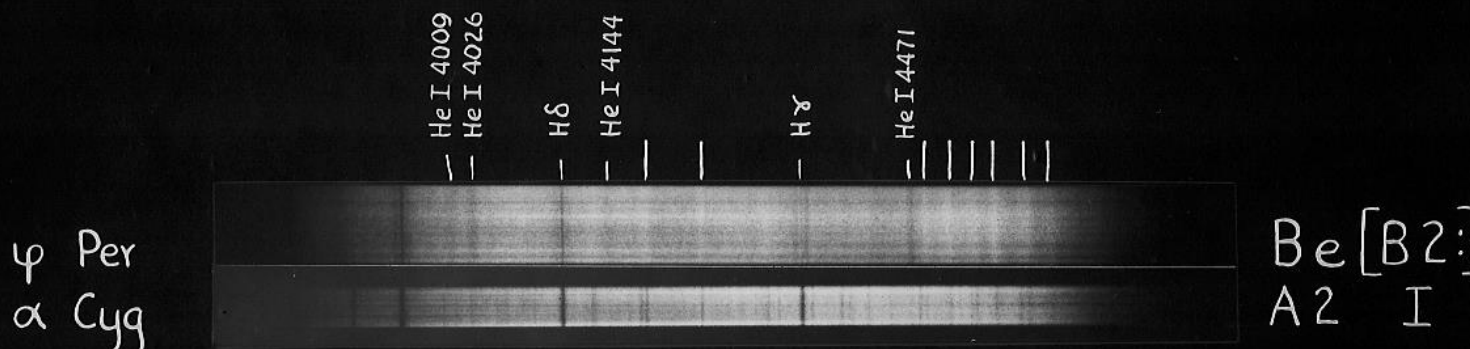
## Bet Lyr with the LISA

**Be stars and P Cygni stars  
From de MKK catalog  
(Morgan Keenan Kellman 1943)**

# BeSS Workshop - Observatoire de Paris

## The Be Star $\eta$ Persei

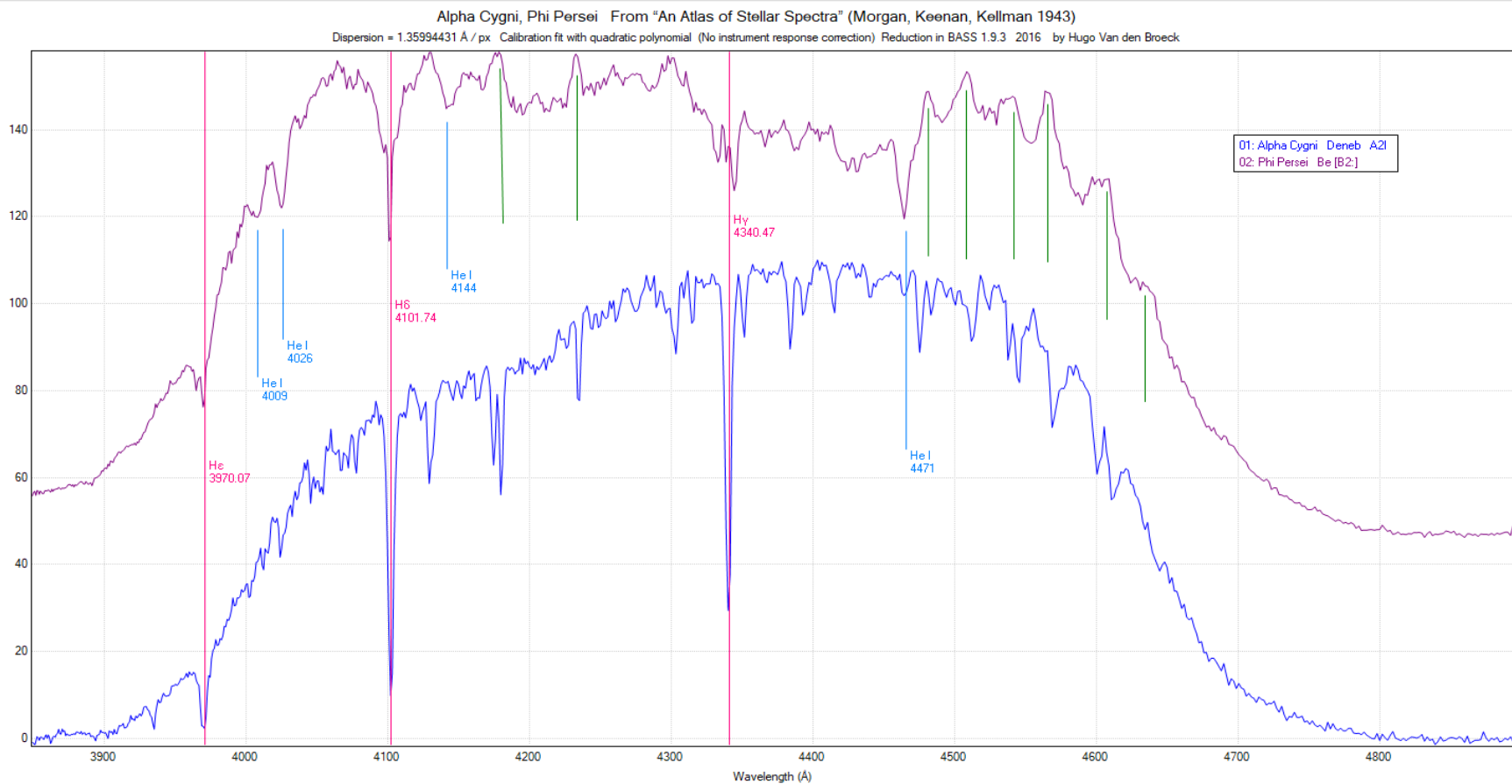
The broad absorption line spectrum consists chiefly of lines due to H and HeI. The H lines are complex, and a number of emission lines are present which agree in



position with enhanced lines in absorption in the spectrum of  $\alpha$  Cygni.

Eastman  
Process

# BeSS Workshop - Observatoire de Paris

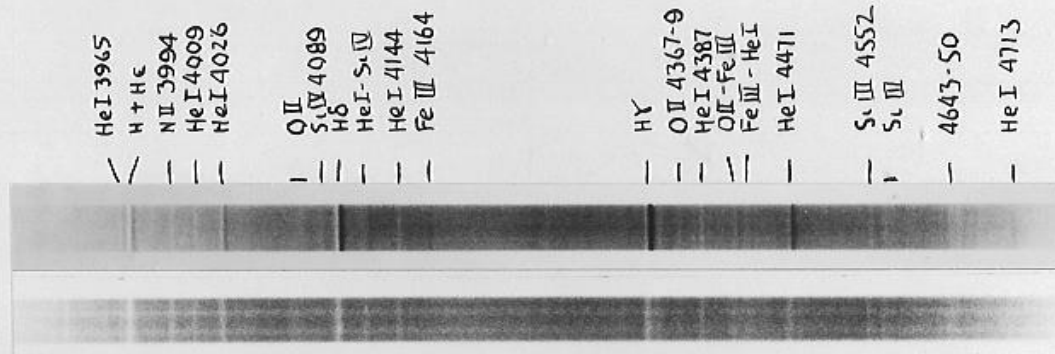


# BeSS Workshop - Observatoire de Paris

P Cygni

The spectrogram of P Cygni was taken on Aug 3, 1941

P Cyg  
 $\chi^2$  Ori



Be

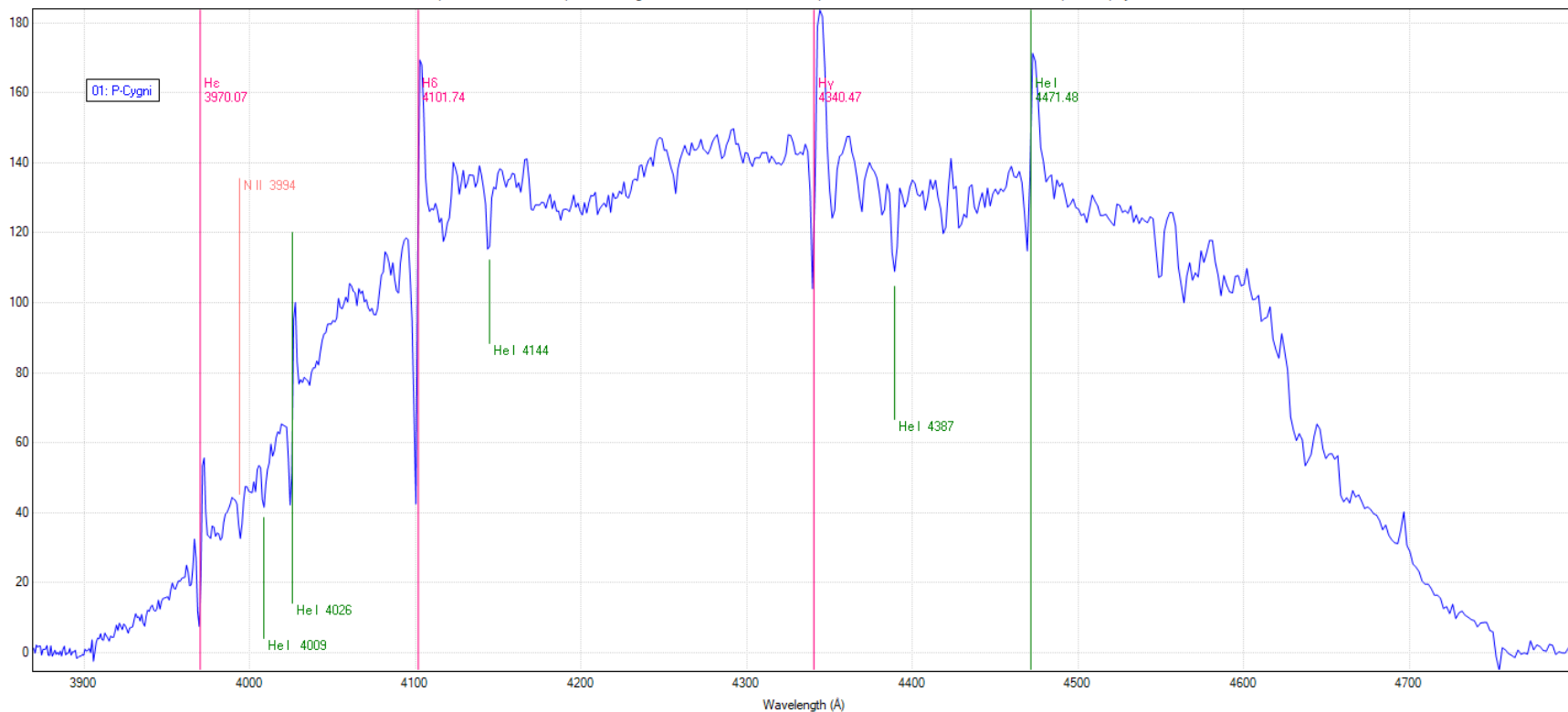
B2 I

The absorption spectrum of P Cygni can be classified as lying somewhere between B0 and B2. The type assigned depends on the lines used for classification.

# BeSS Workshop - Observatoire de Paris

P Cygni Type B1 Ia From "An Atlas of Stellar Spectra" (Morgan, Keenan, Kellman 1943) August 3 1941 Reduction in BASS 1.9.3 June 2016 Hugo Van den Broeck

Dispersion 1.32633392 Å / px Resolving Power R = 1794 @4100Å Equiv Width : 0.44065 Å Calibration fit with quadratic polynomial



BASS Project 1.9.6 Beta 324

### **Goals for the future:**

- 1. Improve the quality of the spectra**
- 2. Participate in BeSS with Higher Resolution Spectra**



**End**

**BeSS Workshop**  
Spectra of Be stars

Observatoire de Paris, Meudon  
October 23 – 27 2017

