Spectroscopic Record Sheet

Details on acquisitions

Object	StDr57
Coordinates (J2000)	04:20:43.81 +44:56:28.17
Type	PN Candidate

Observation date	23.087/08/2020 (d/m/y)
Meteorological conditions	20°C
Observer	L.Mulato
Location	Cornillon France

Mount	NEQ6
Telescope	Newton Skywatcher 200 mm F/5
Spectrograph	Alpy 600 - 23 µm slit
Resolution (bin 1x1)	~1 Å at λ656 nm
Science camera	ATIK 414 EX
Dispersion (bin 1x1)	~0,3 nm/pixel at λ656 nm
Cam Temperature	0 °C
Binning	2x2
Guiding camera	ASI290 MM non cooled
Data acquisition Soft	PRISM V10
Data processing Soft	Isis V5.9.3

Exposure on object	5 x 1200 s
Master Dark date	28/06/2020 (d/m/y)
Dark Exposure	18 x 1200 s
Dark Temperature	0 °C
Master Offset date	22/05/2020 (d/m/y)
Master Flat date	22/08/2020 (d/m/y)
Neon-Argon calib. date	23/08/2020 (d/m/y)
Reference star calib.	HD29526_A0V
Exposure on ref star	17 x 8 s
Ref Star Sp. date	23.130/08/2020

Images and slit position

Image Ha

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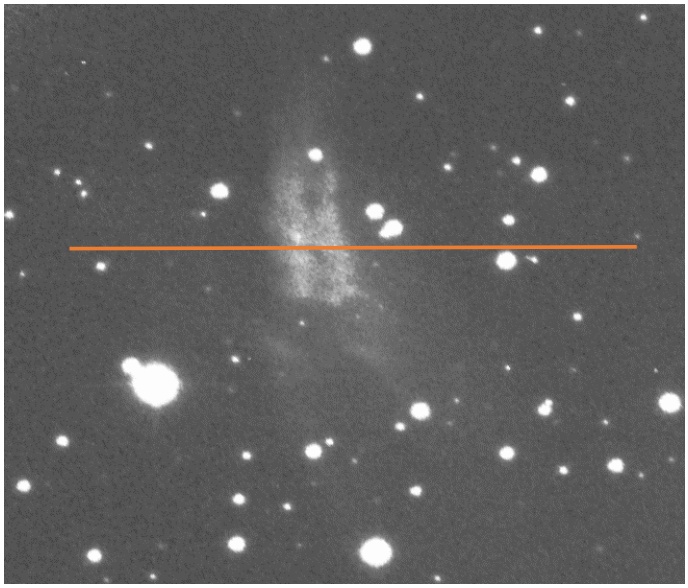
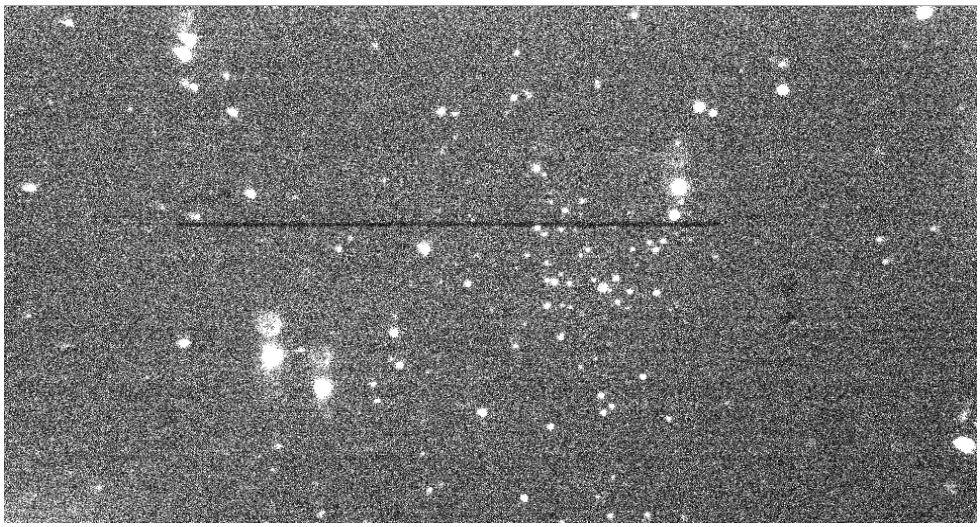
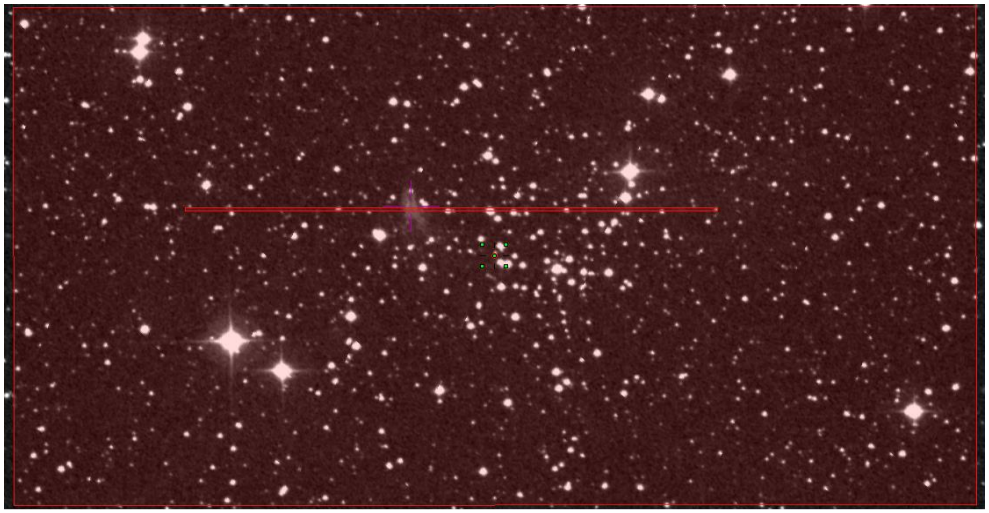


Slit position
Autoguider

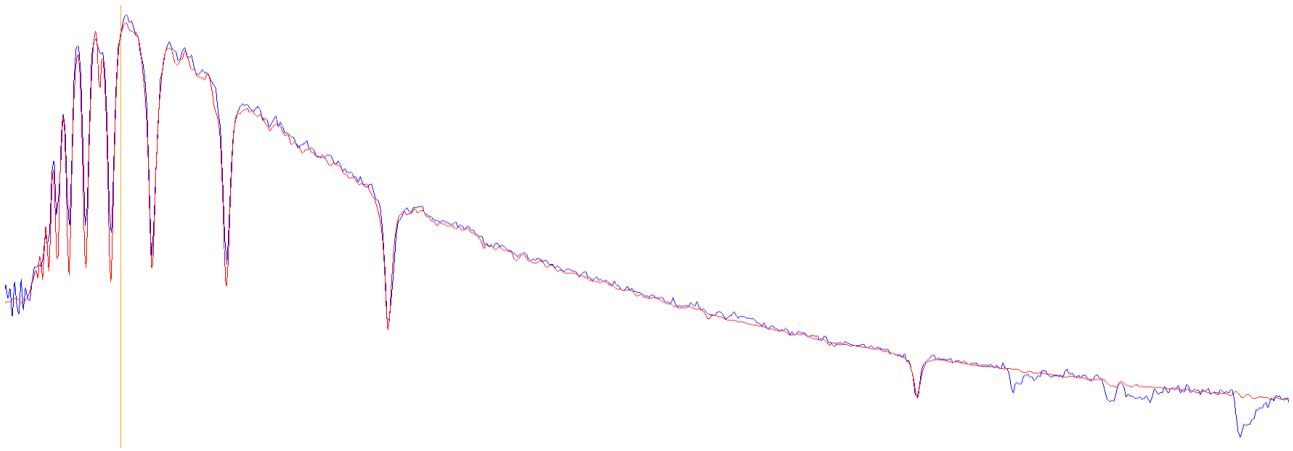


Slit position
IPHAS

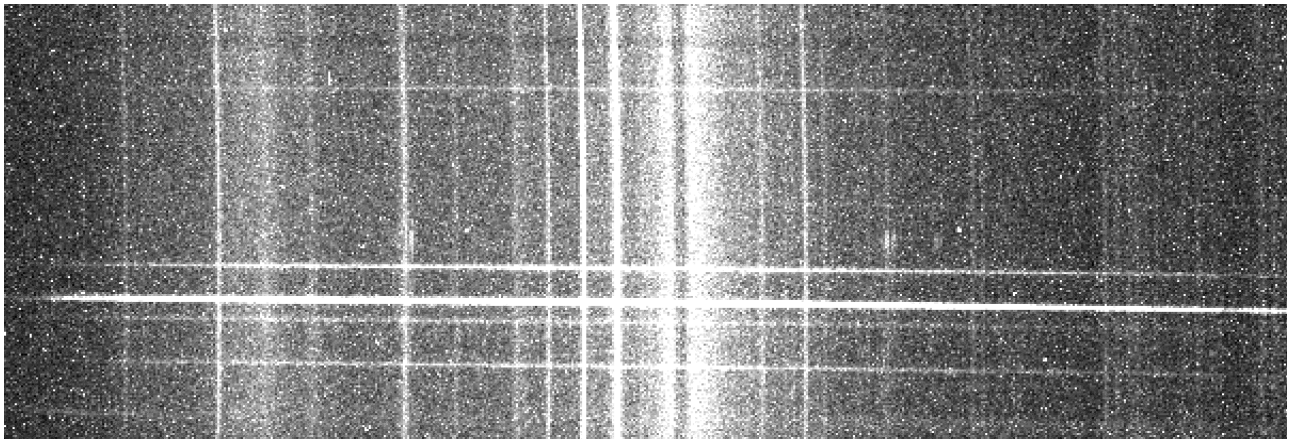


Instrumental Response and 2D Spectrum

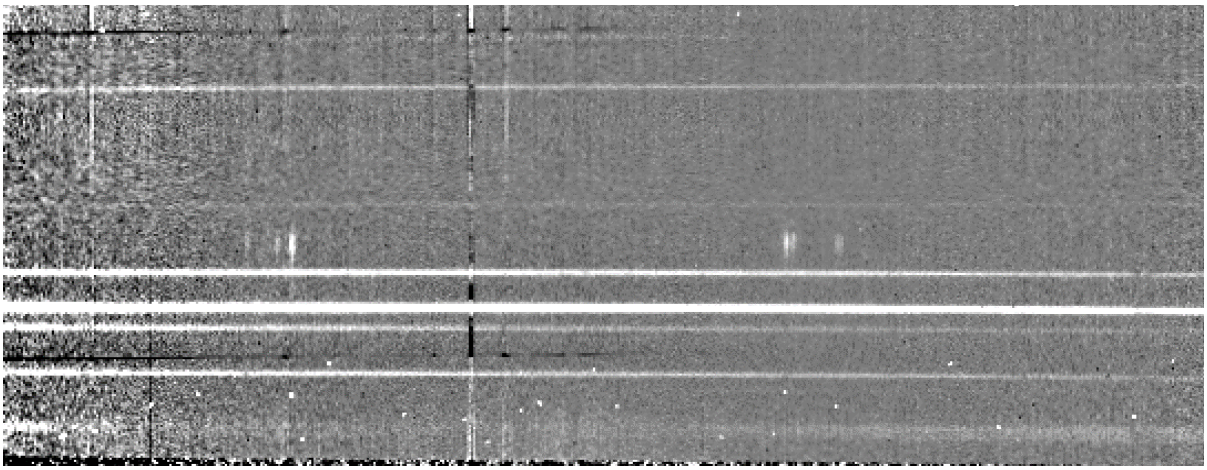
Instrumental response (red = theoritical ref star spectrum ; blue = acquired ref star spectrum with instrumental response correction applied)



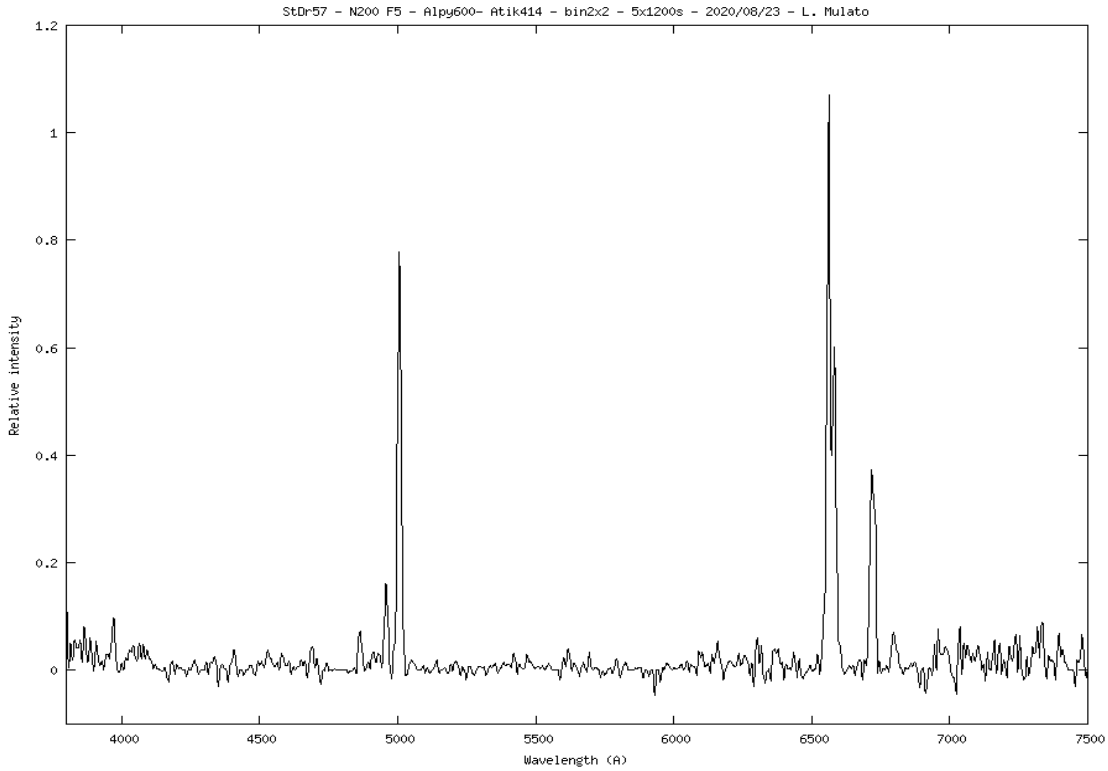
2D Raw spectrum



Processed 2D spectrum



Results



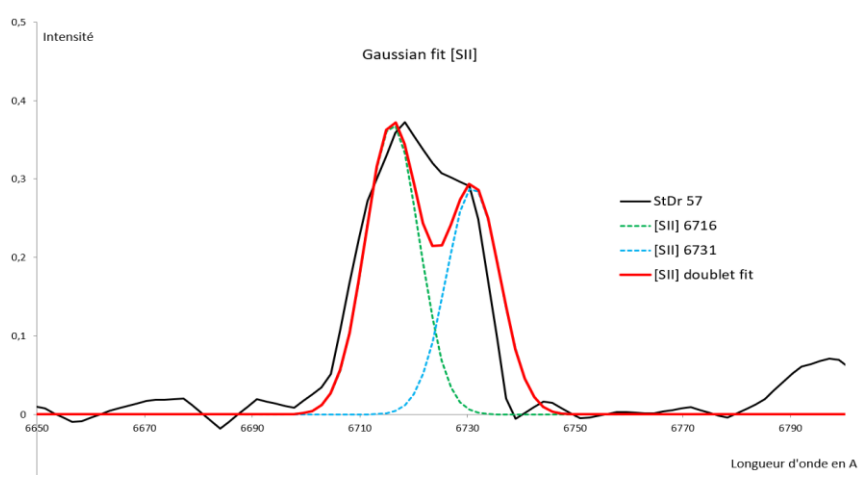
Comments :

Detected lines : Halpha > [N II] (6548 + 6583), strong [O III] >> H-bêta, quite strong [SII]

Low electronic density 6716 > 6731, no spectral shift (<100 km/s, spectroscope resolution limit)

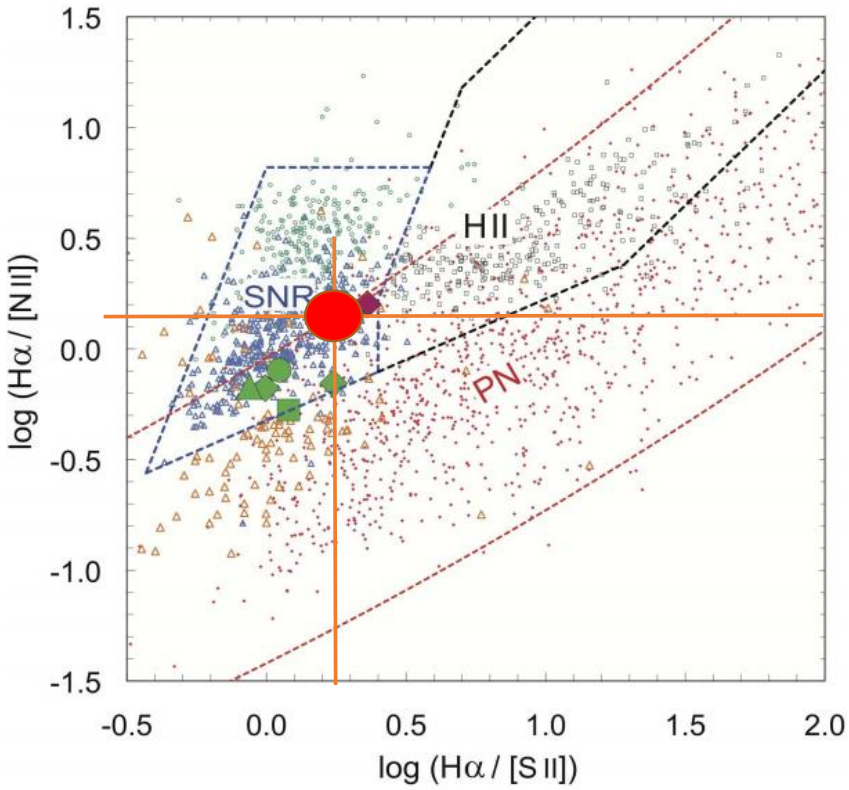
StDr 57 is also identified as a galaxy "ZOAG G157.08-03.61" and as an HII Region "LBN 157.08-03.61". This is probably wrong. StDr57 is placed on the diagnostic diagrams taken from Sabin, 2012 (diagrams on next page). According to the diagrams StDr 57 could be a SNR or a PN of med excitation (no CSPN found) rather than a HII Region.

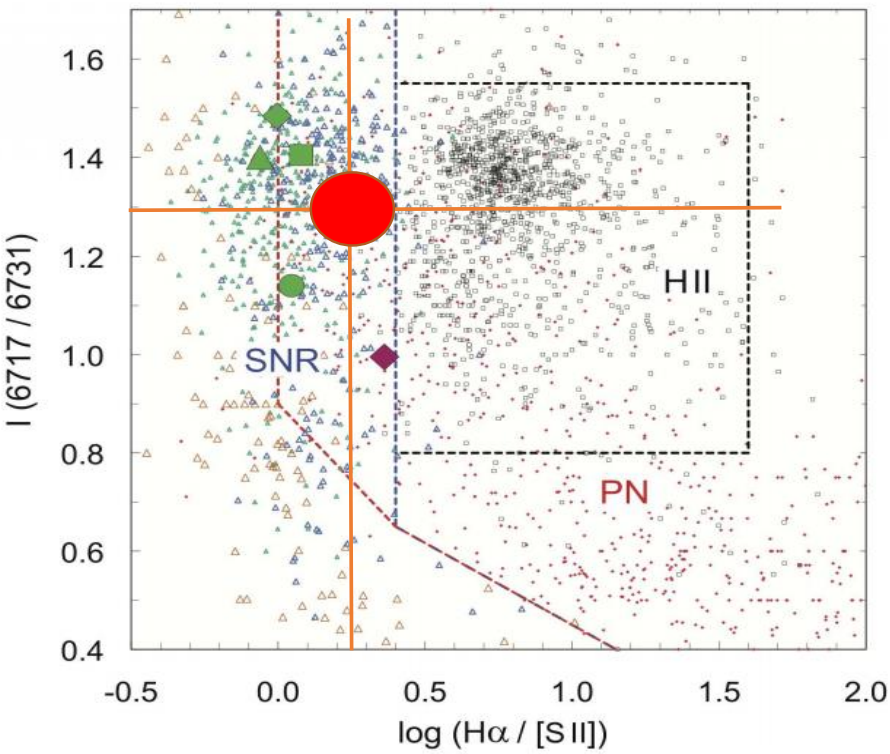
A Gaussian fit of the blended [SII] doublet roughly gives a 6716/6731 ratio of ~1,3. The ratio of the other lines of interest is given below (assuming [OIII]5007/4959 = 3 and [NII] 6584/6548 = 3) :

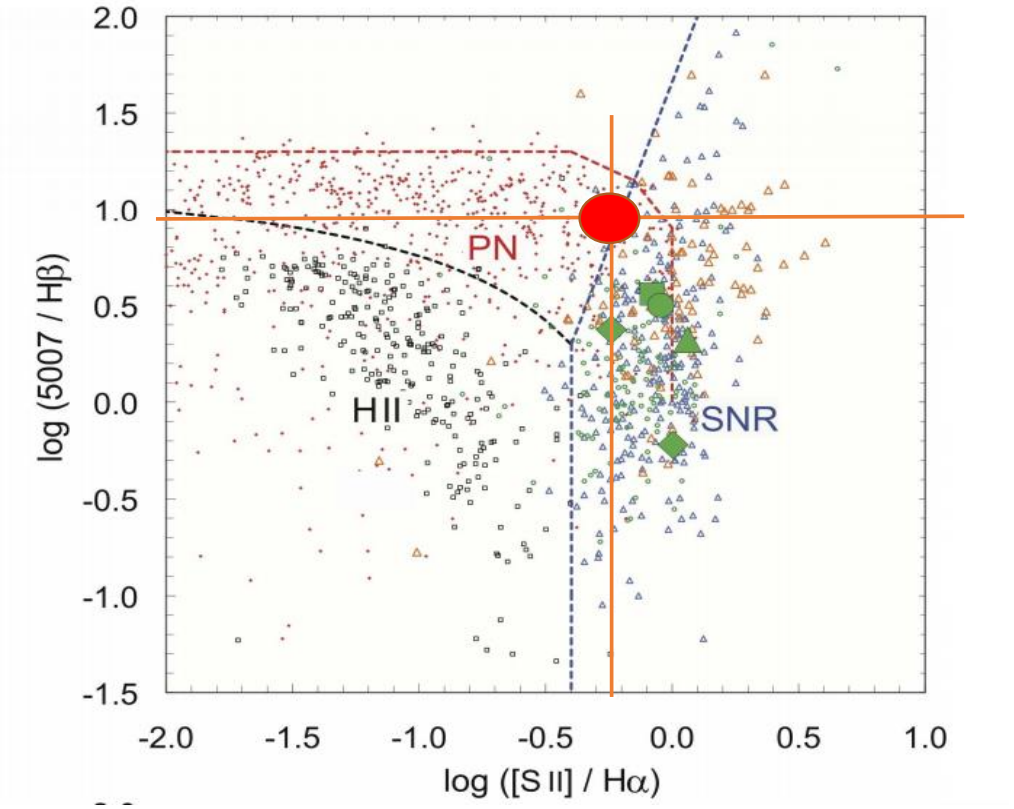


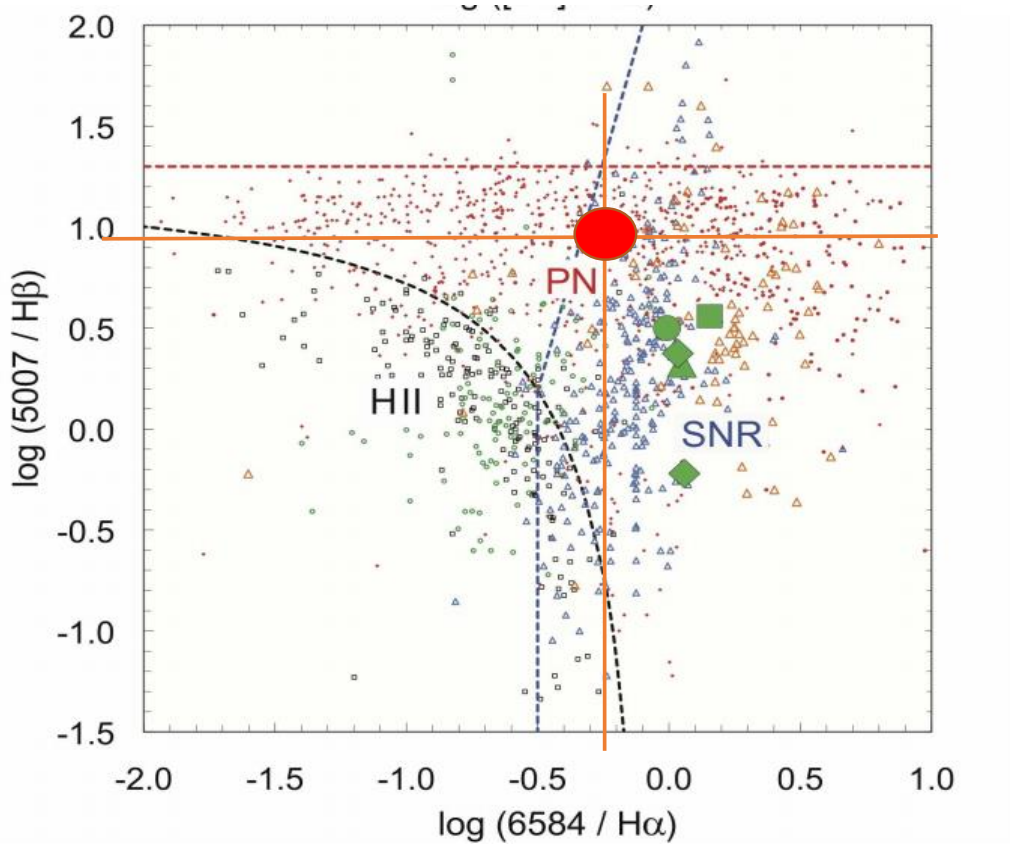
log(Ha/SII) :	0,25
log(Ha/NII) :	0,12
log(SII/ha) :	-0,25
log(6584/Ha) :	-0,25
log(5007/Hb) :	1,03
log(5007/Hb) dered :	0,95

Diagrams are taken from : https://arxiv.org/pdf/1301.6416.pdf
Red dot : StDr 57






PN
HII
SNR
log (5007 / Hβ)
log ([S II] / Hα)
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0


PN
HII
SNR
log (5007 / Hβ)
log (6584 / Hα)
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-1.5
-1.0
-0.5
0.0
0.5
1.0