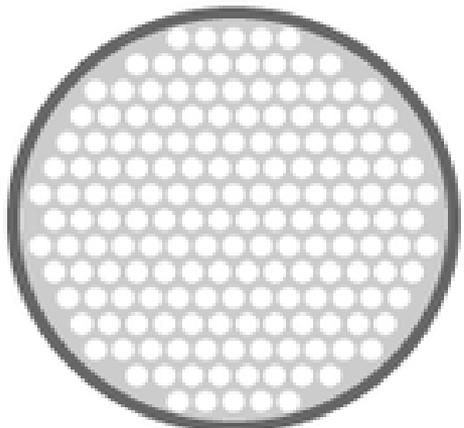
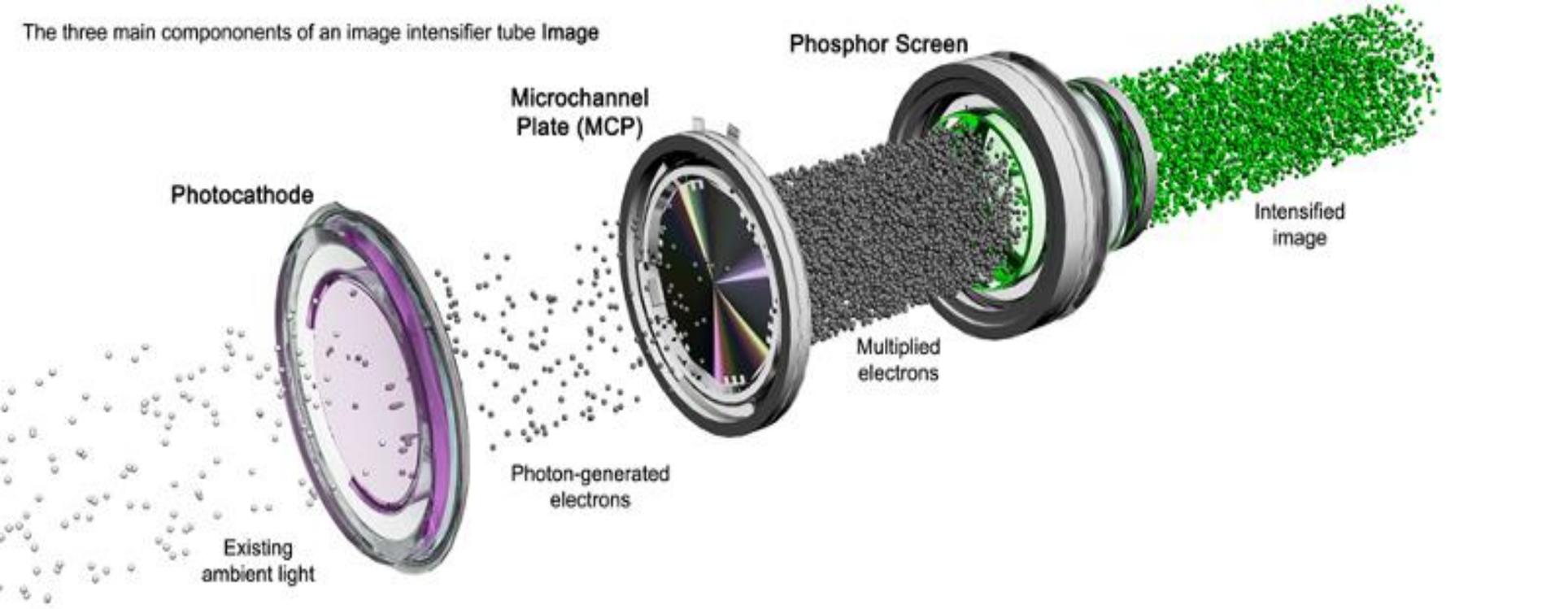
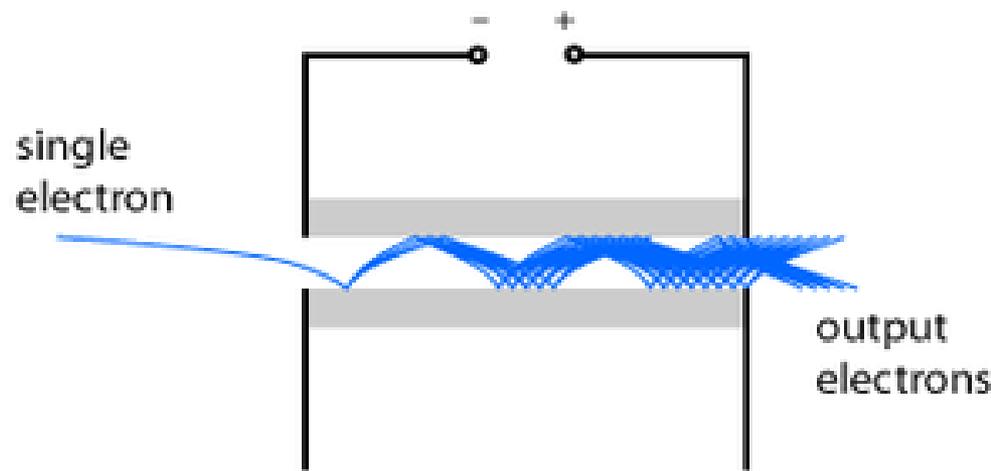


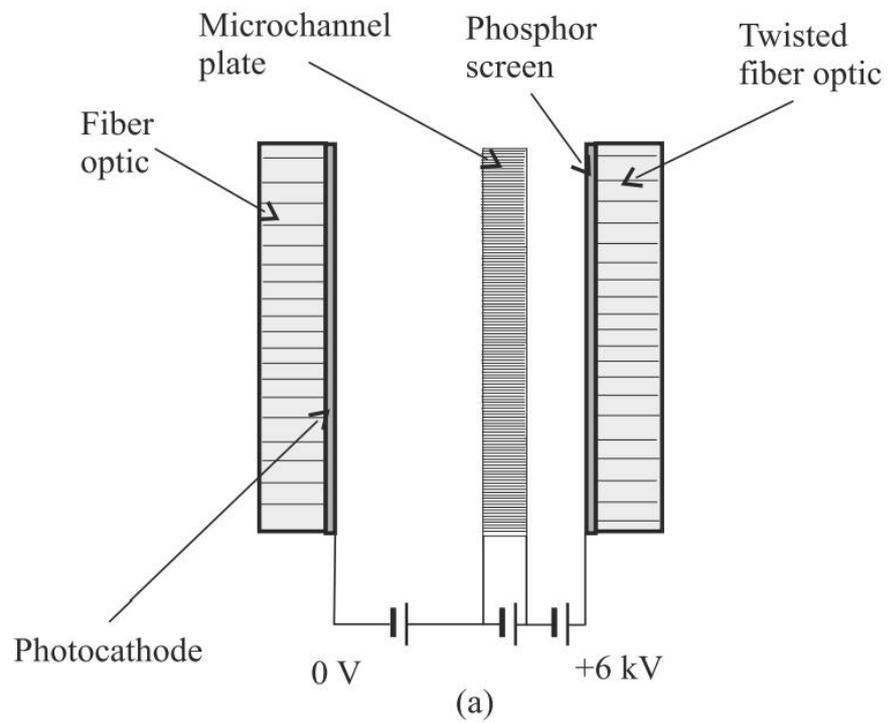
The three main components of an image intensifier tube Image



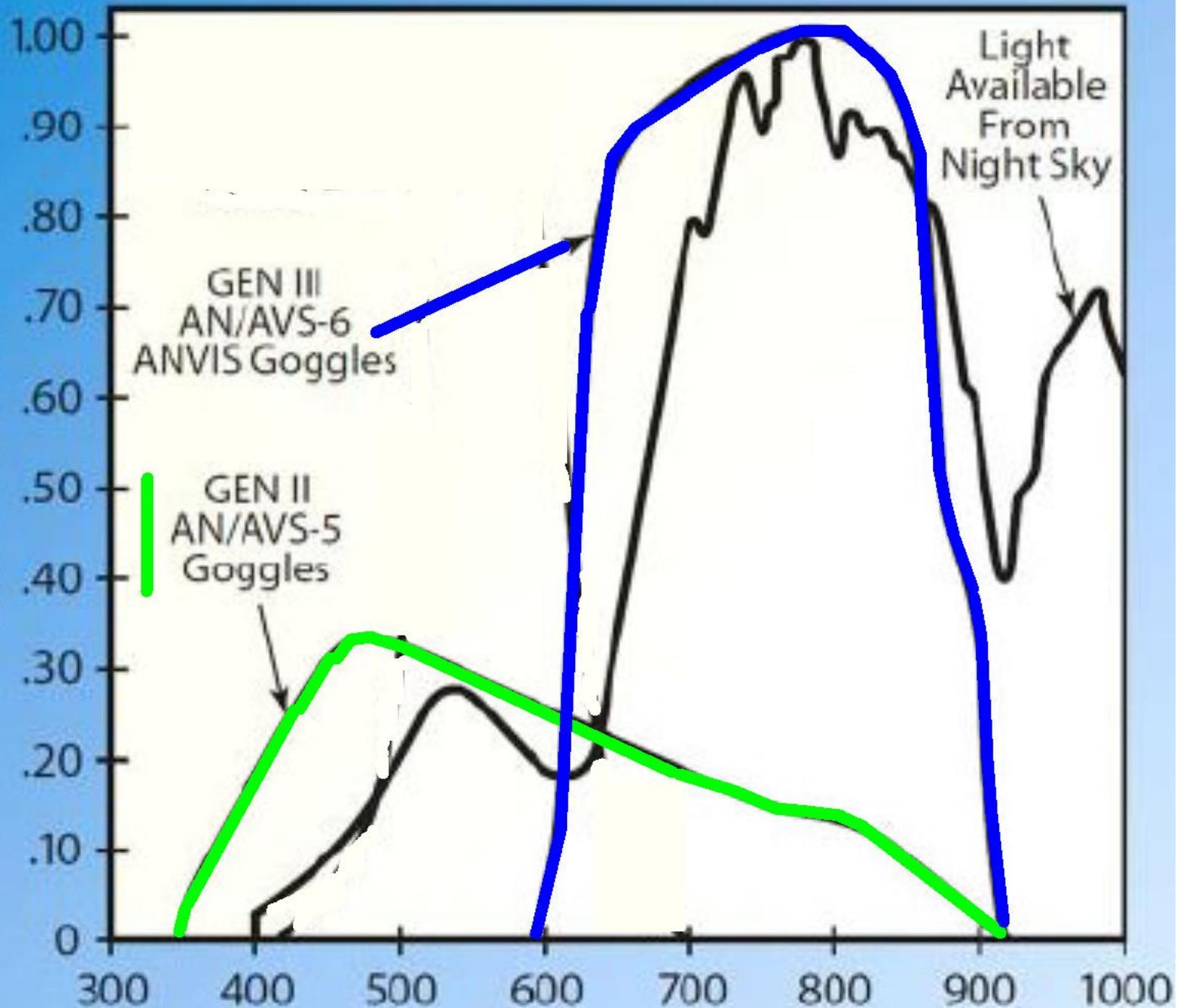
a) front view of microchannel plate



b) electron avalanche in a single channel



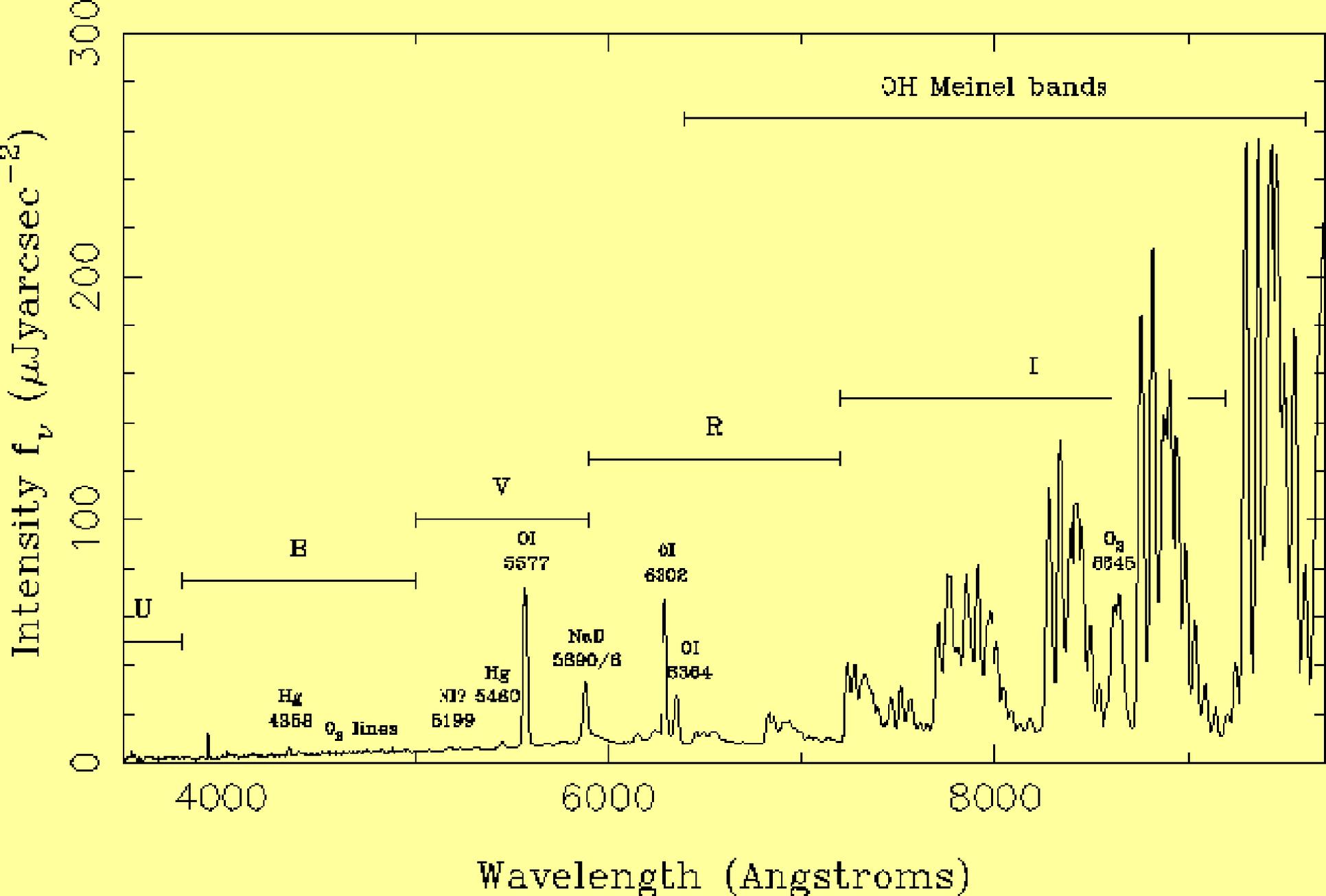
Relative Response And  
Light Energy Level



GEN III  
AN/AVS-6  
ANVIS Goggles

GEN II  
AN/AVS-5  
Goggles

Light  
Available  
From  
Night Sky



Airglow-Spektrum



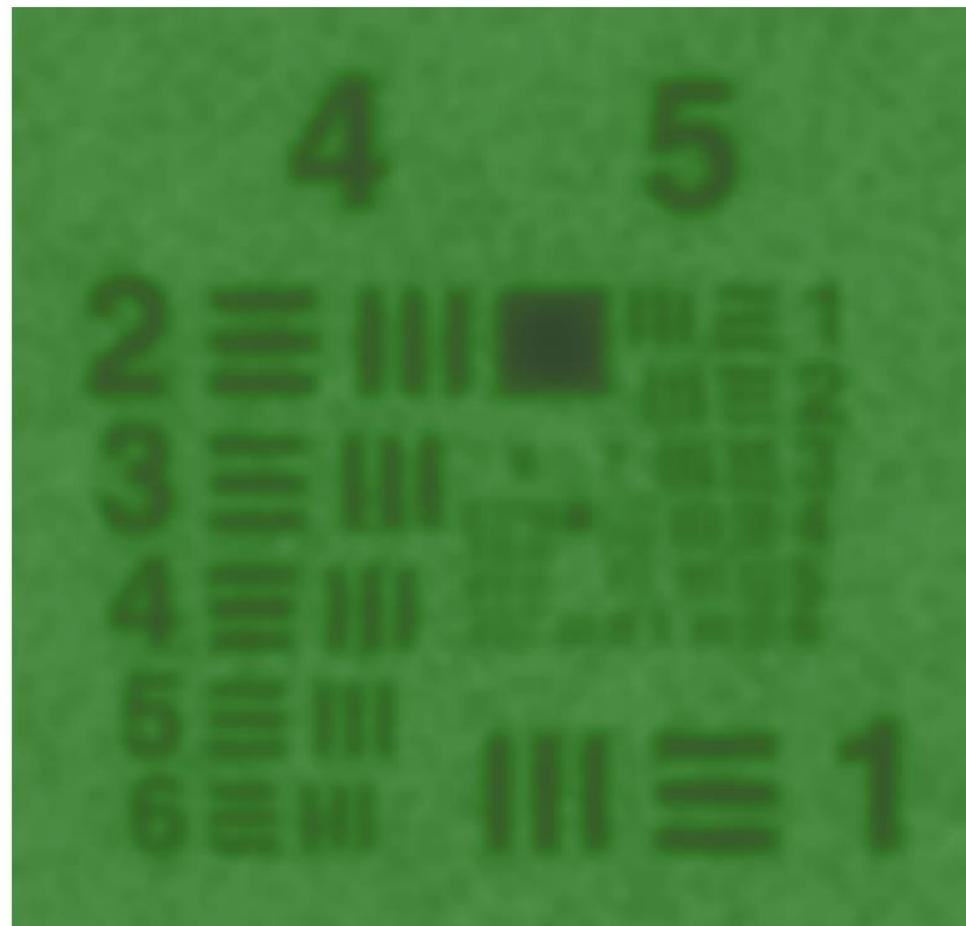
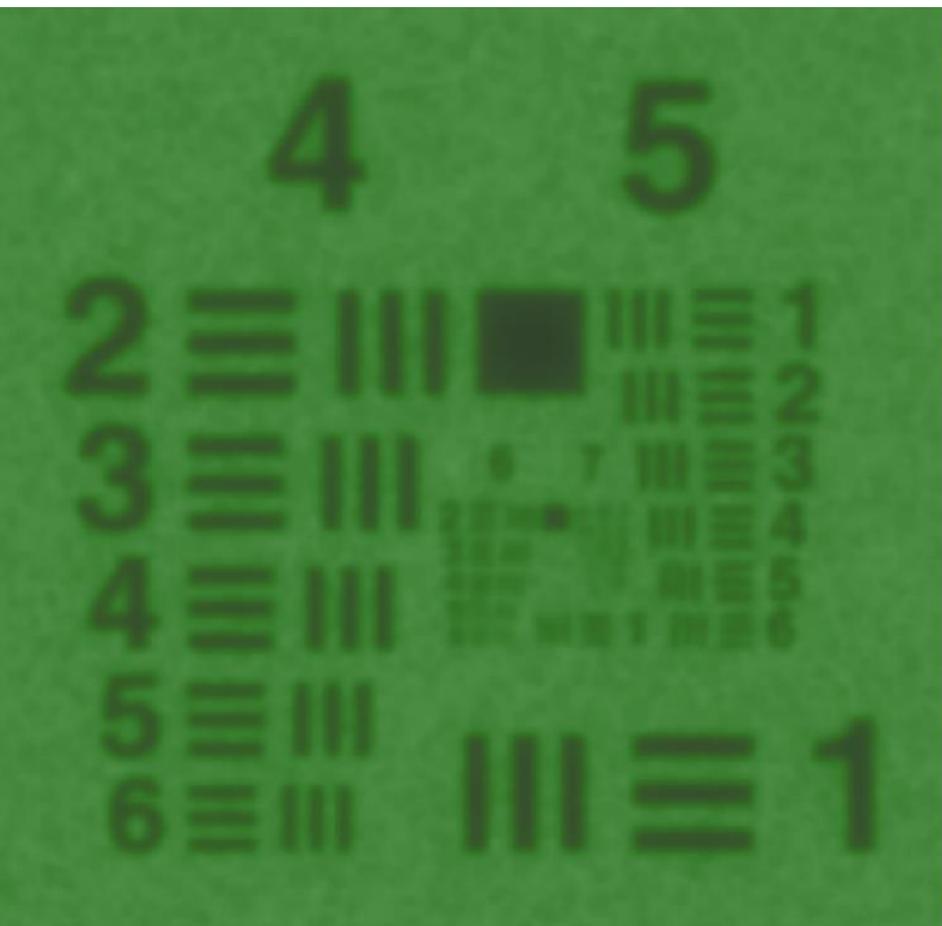
Generationen



Gen2 und Gen3



Signal-Rausch-Verhältnis (SNR). Gen2+: 13, Gen 3: 22



Auflösung, 64 und 40 lp/mm



$$\text{FOM} = \text{RESOLUTION} \times \text{SNR}$$

Figure of Merit Formula

FOM, Figure of merit, Leistungszahl:  
Gen2+, „commercial grade“ ~1000  
Gen2+ / Gen3, ausgesucht: 1600-2400  
Je FOM, desto teurer



Minox

MUM14

OVNI-M

Preis 1000

ab 3200

ab 7000

SNR 28

17

32

Auflösung 70

60

70

FOM 2000

1020

2240

Neugerät zum bezahlbaren Preis  
HMG22 F26 Gen2+  
[army-store24.de](http://army-store24.de)



Leistungsparameter im Vergleich



**Baader**

*Filter H-alpha CMOS Narrowband 50,4mm*

€ 245,-

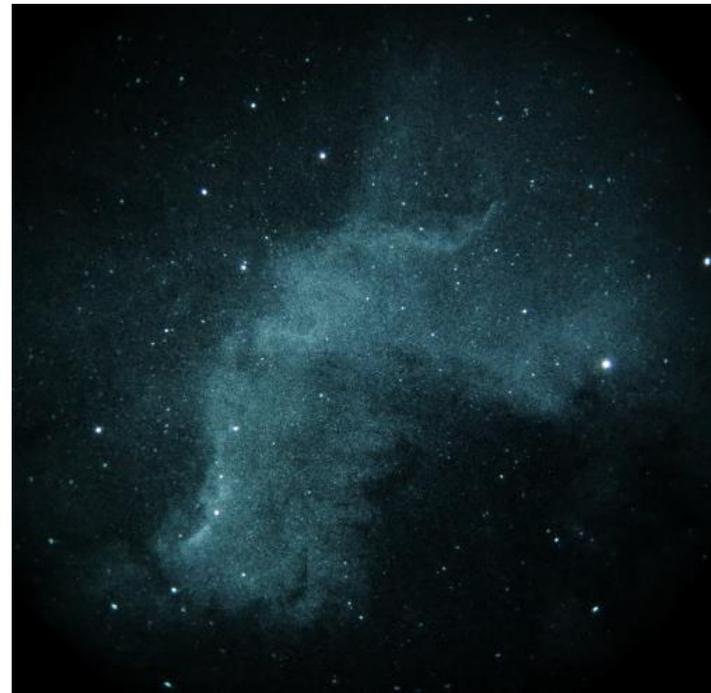
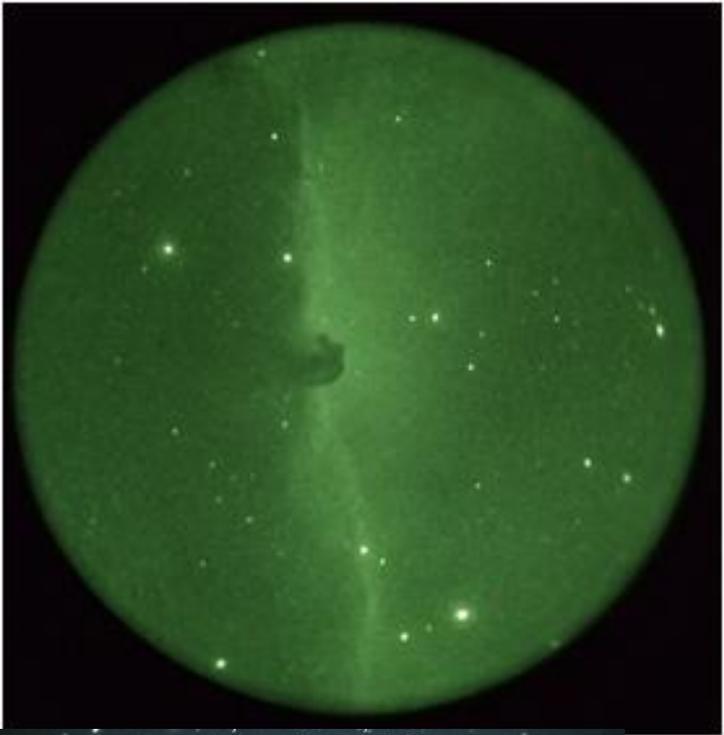


**Baader**

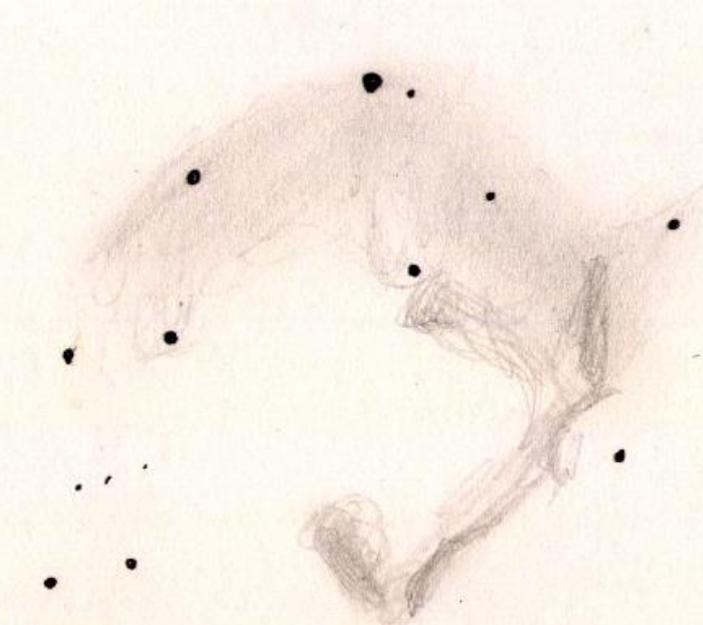
*Filter H-alpha CMOS f/2 Highspeed  
50,4mm*

€ 254,-

H- $\alpha$ -Filter, normal und preshifted



NSG sind H- $\alpha$ -Filter!



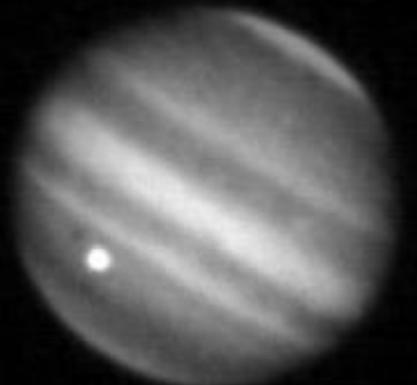
NSG sind H- $\alpha$ -Filter!

Propellernebel

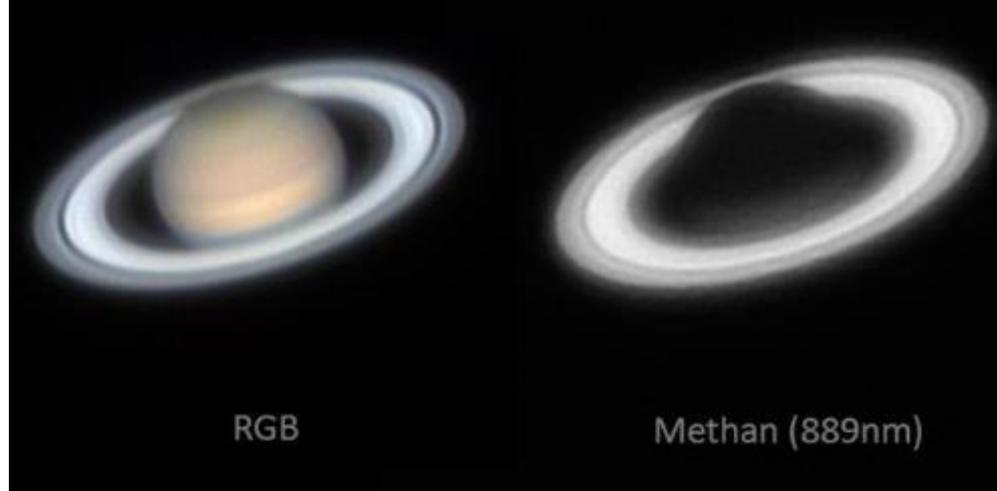
H $\alpha$ , 14,4x



03.04.2017 00:54 Uhr



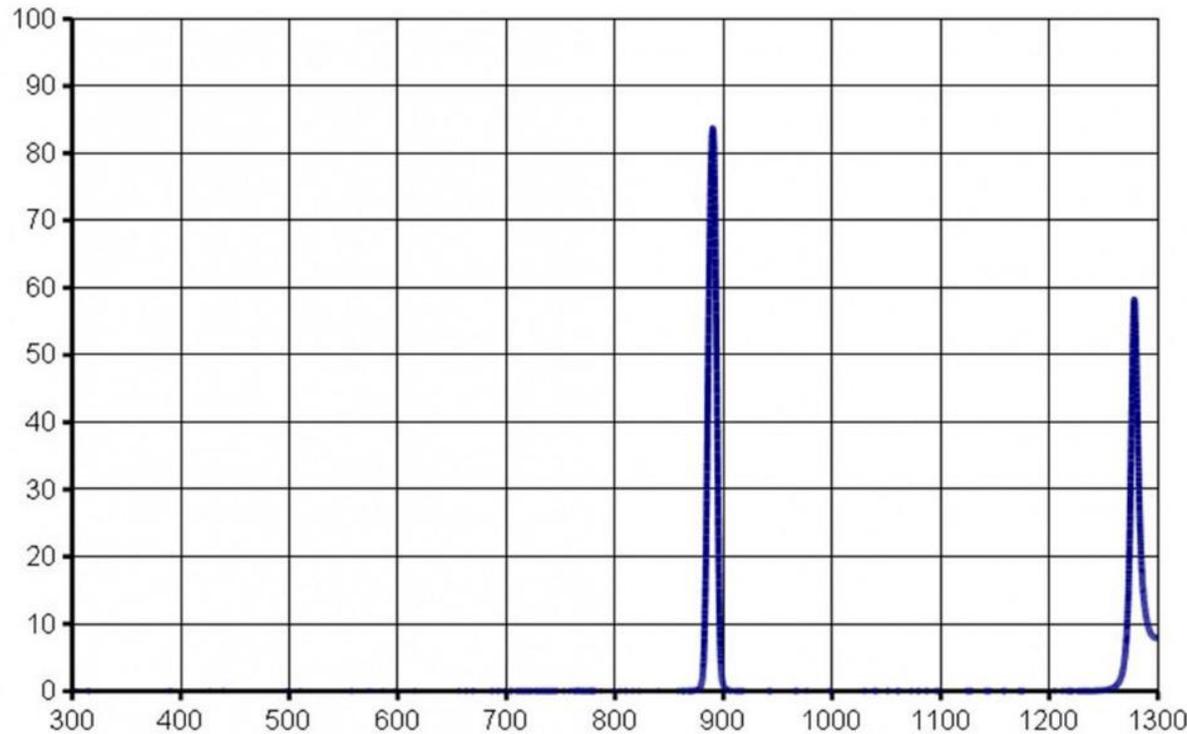
03.04.2017 01:09 Uhr

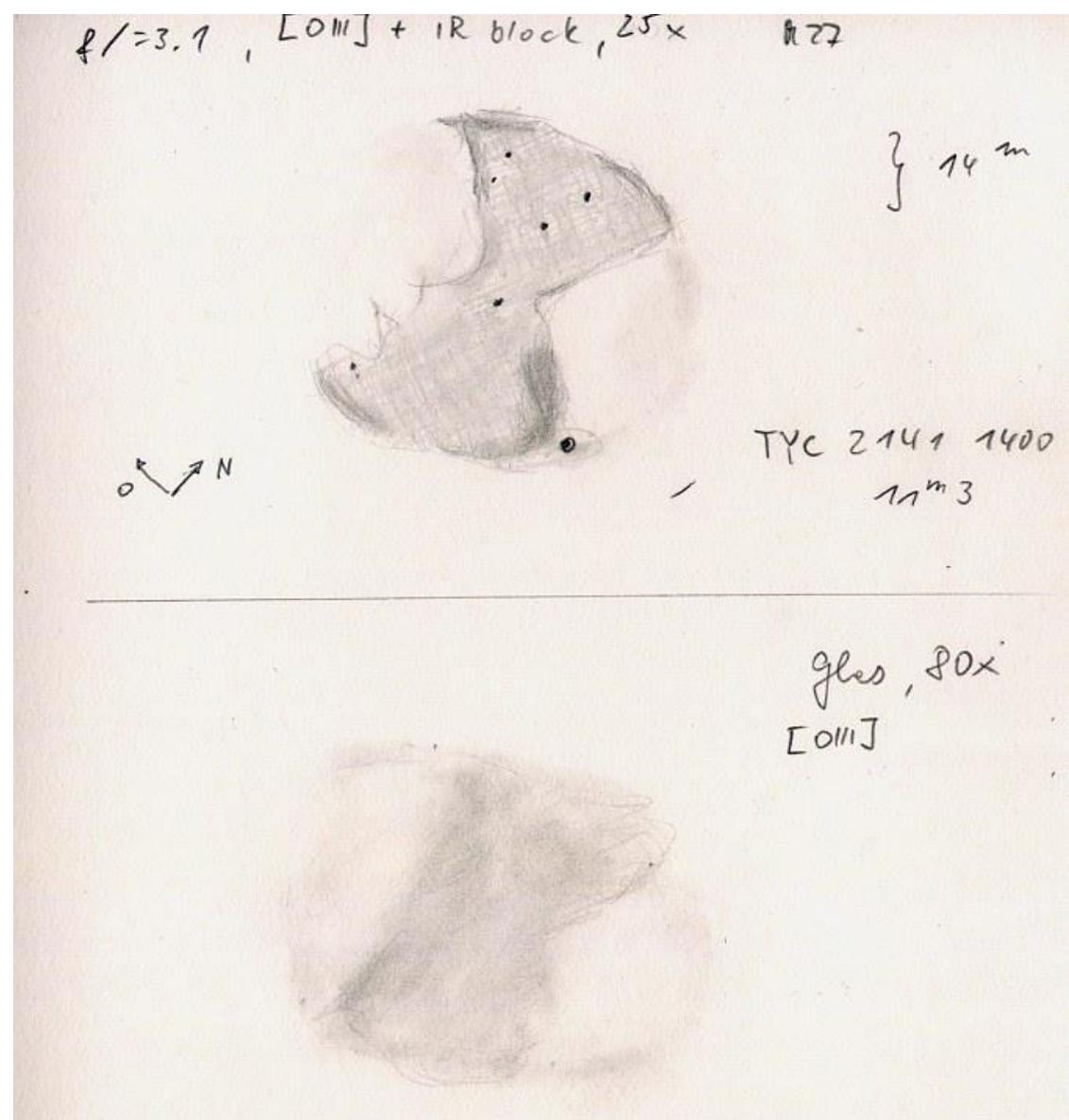


RGB

Methan (889nm)

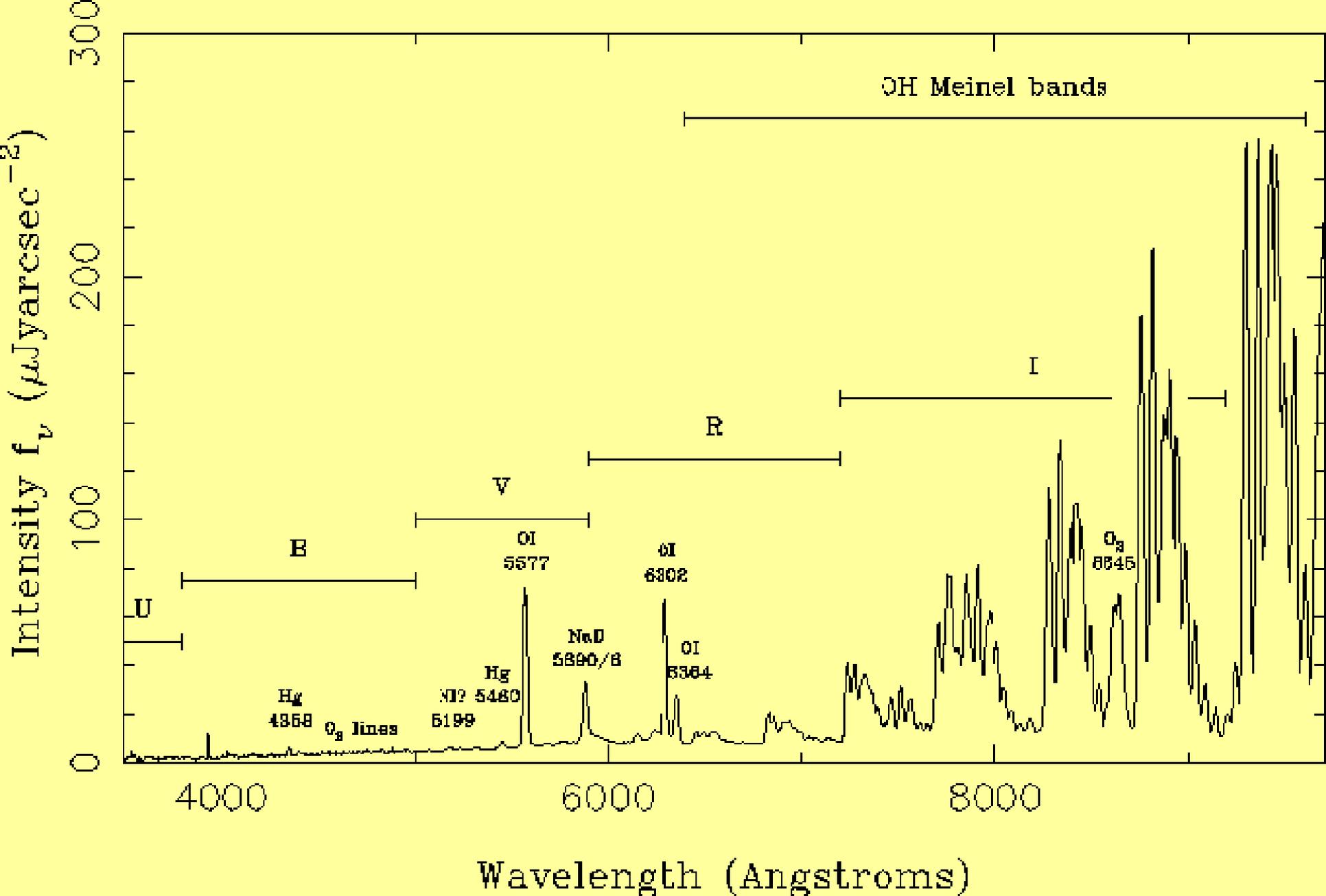
Methanbandfilter  
889  $\mu\text{m}$  (240€)





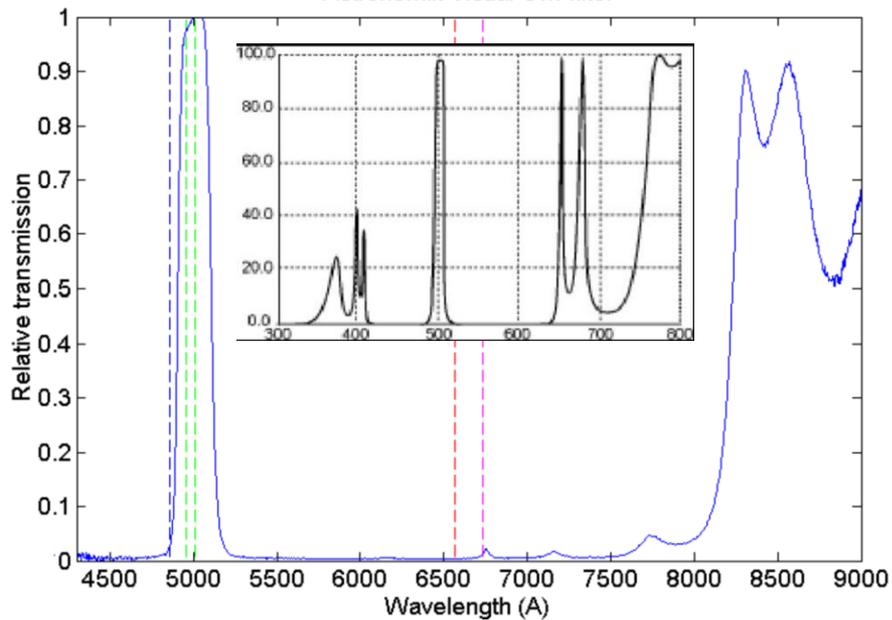
Ohne Filter

[OIII-Filter]

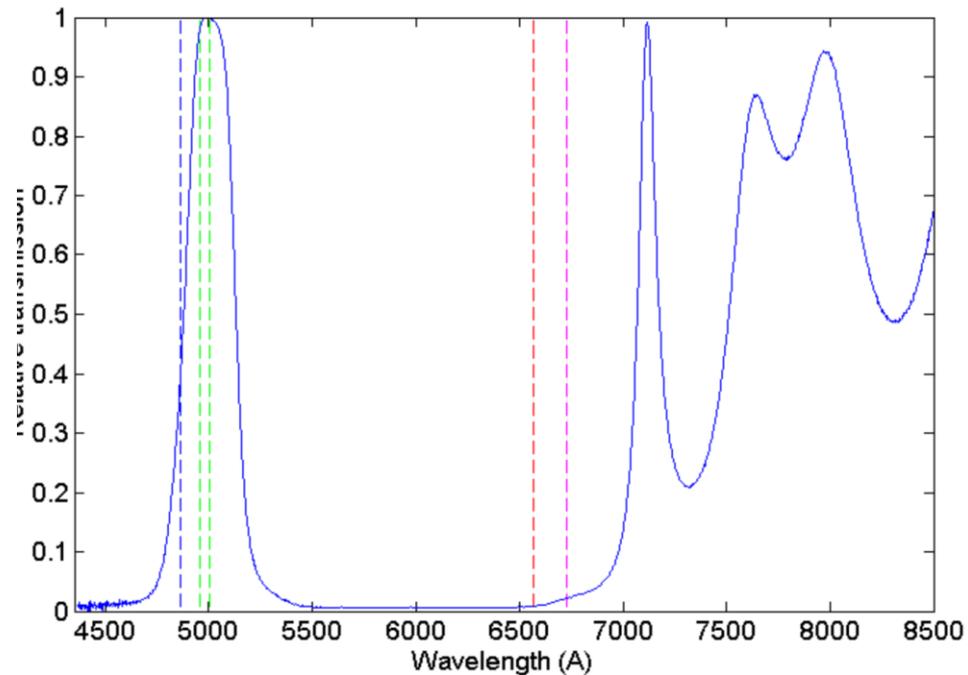


Airglow-Spektrum – wie filtern?

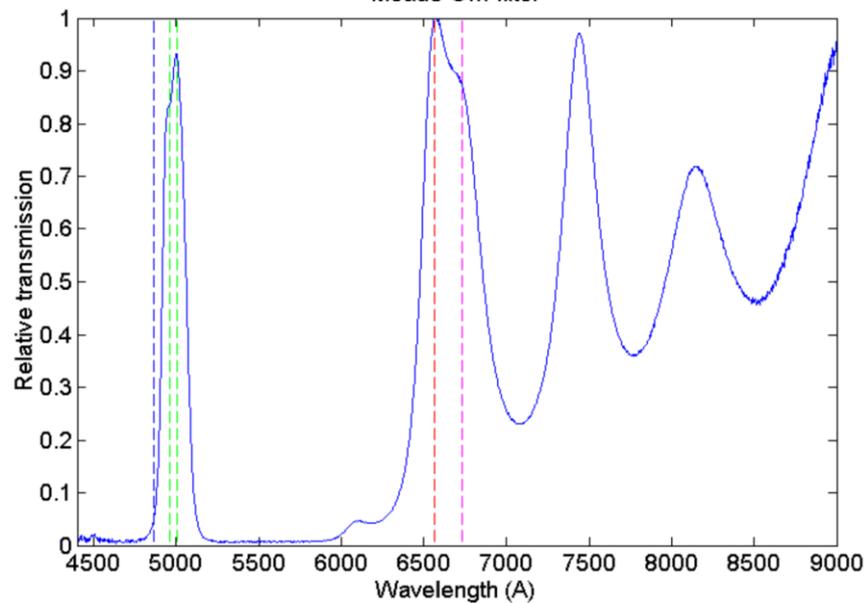
Astronomik Visual OIII filter



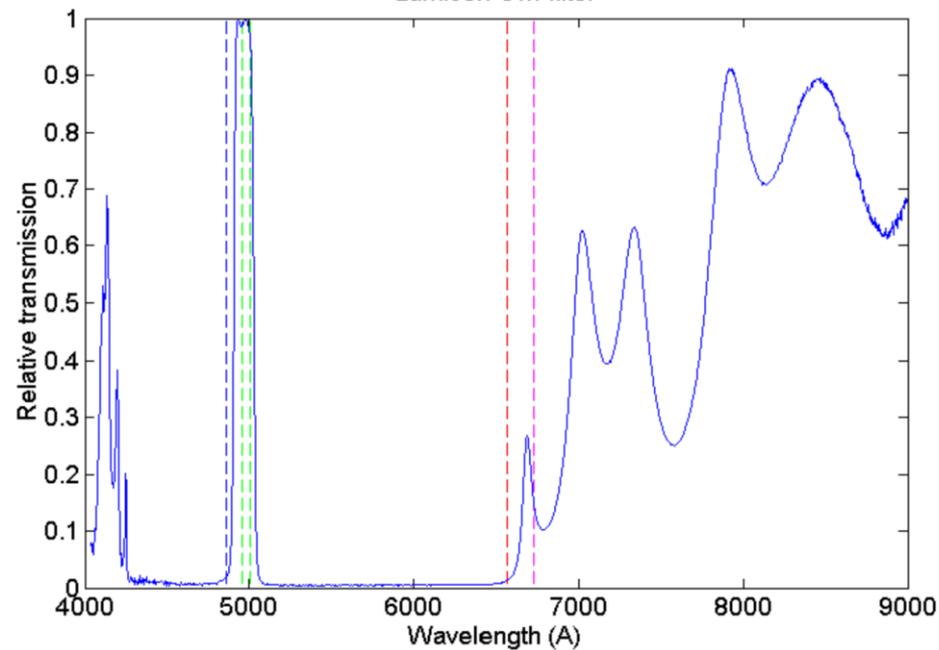
TeleVue Bandmate OIII filter



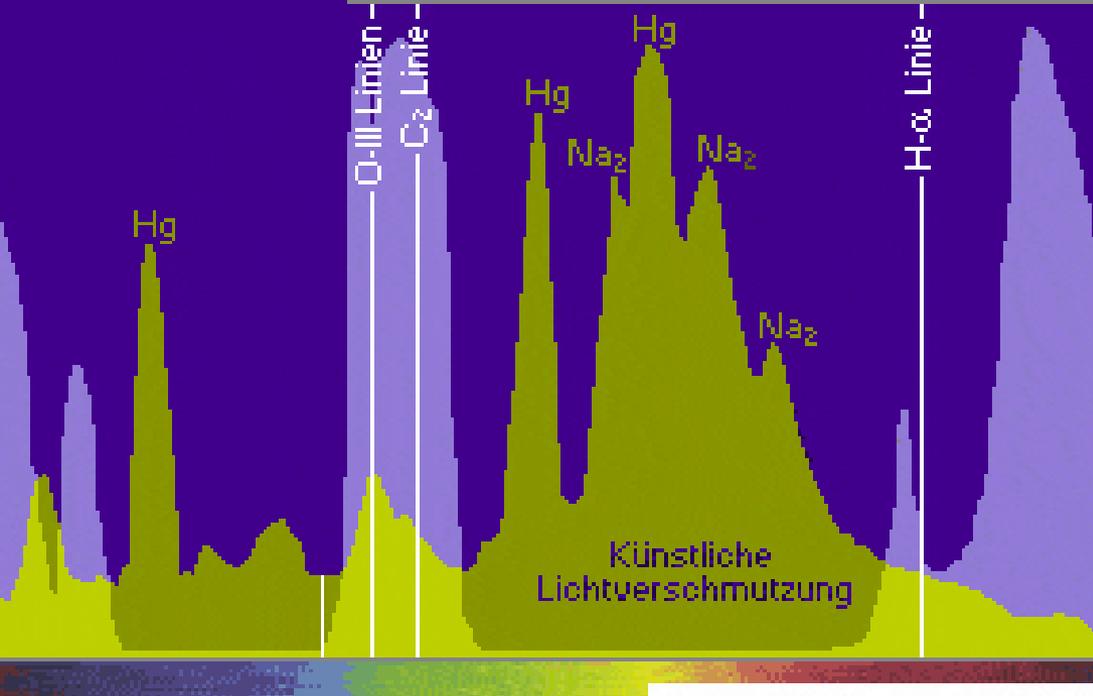
Meade OIII filter



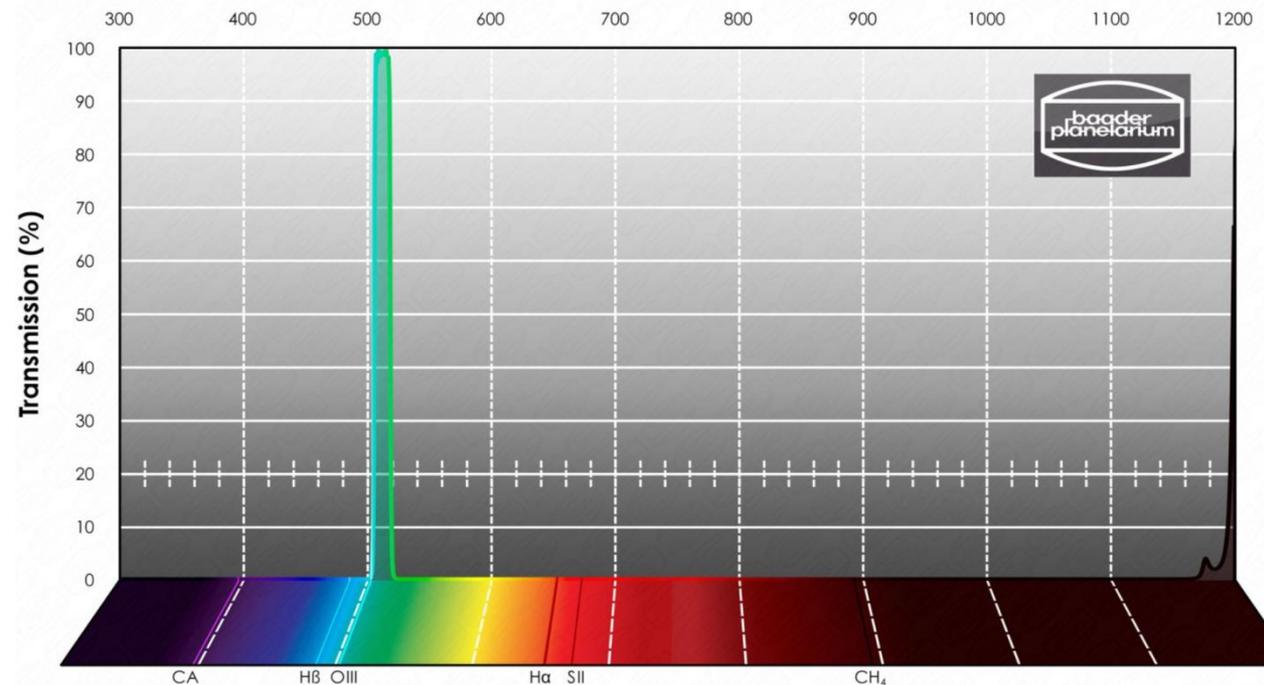
Lumicon OIII filter



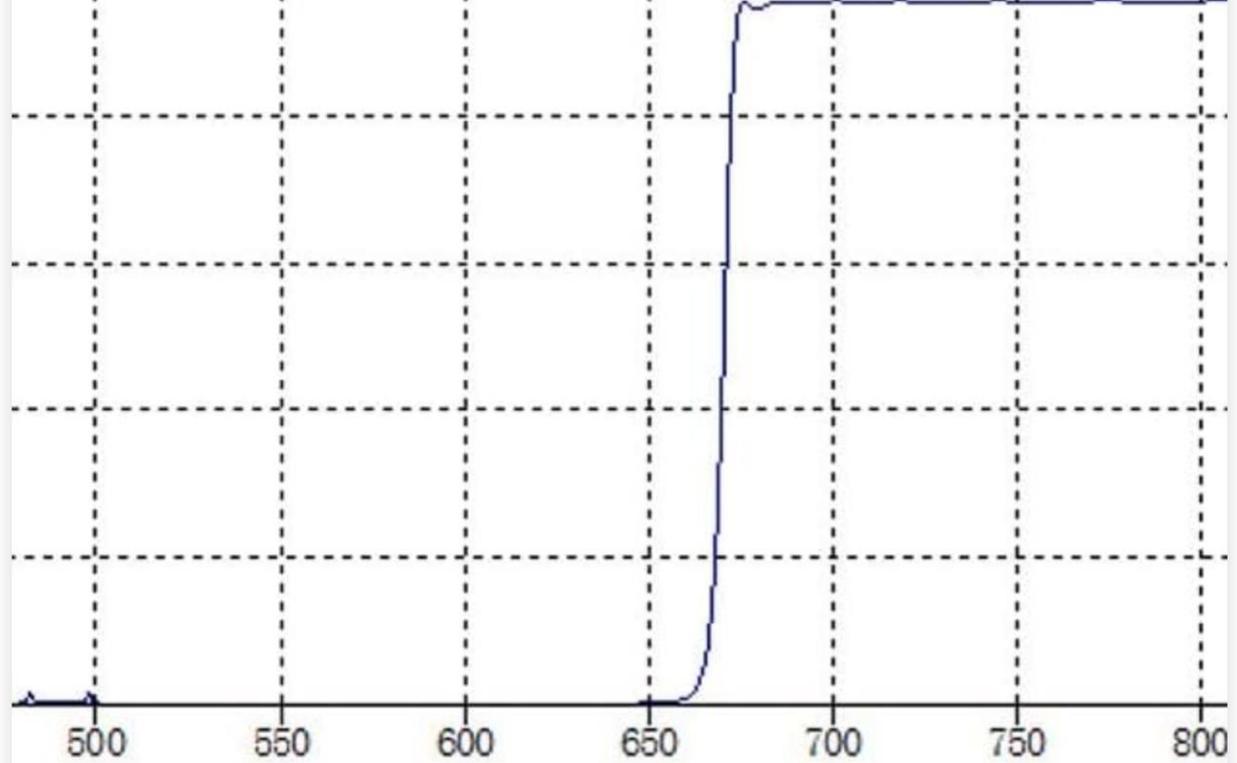
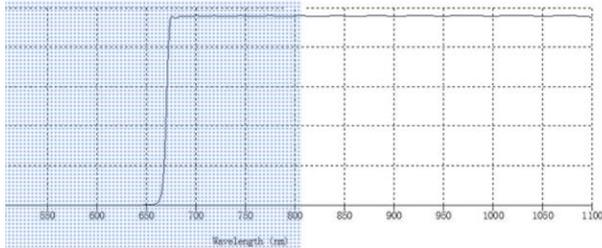
[OIII]



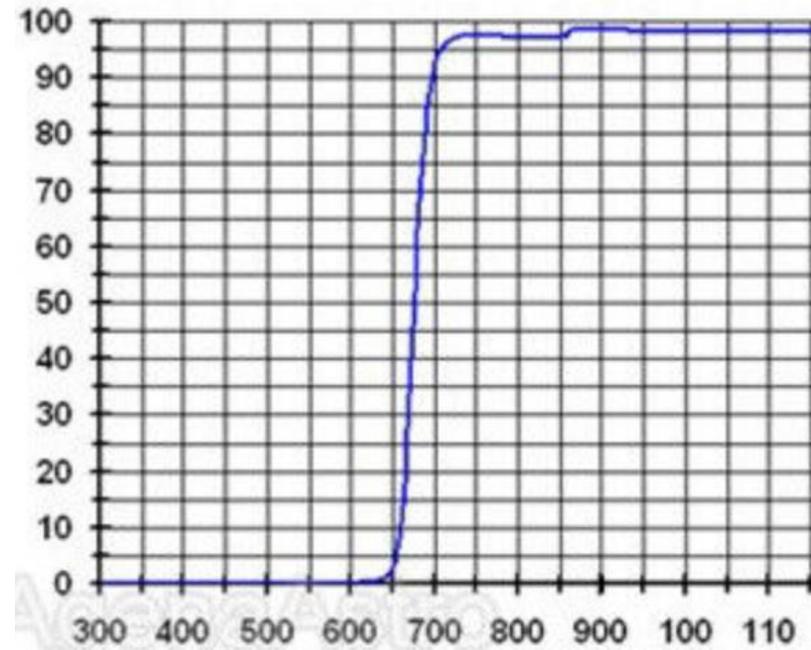
Wavelength (nm)



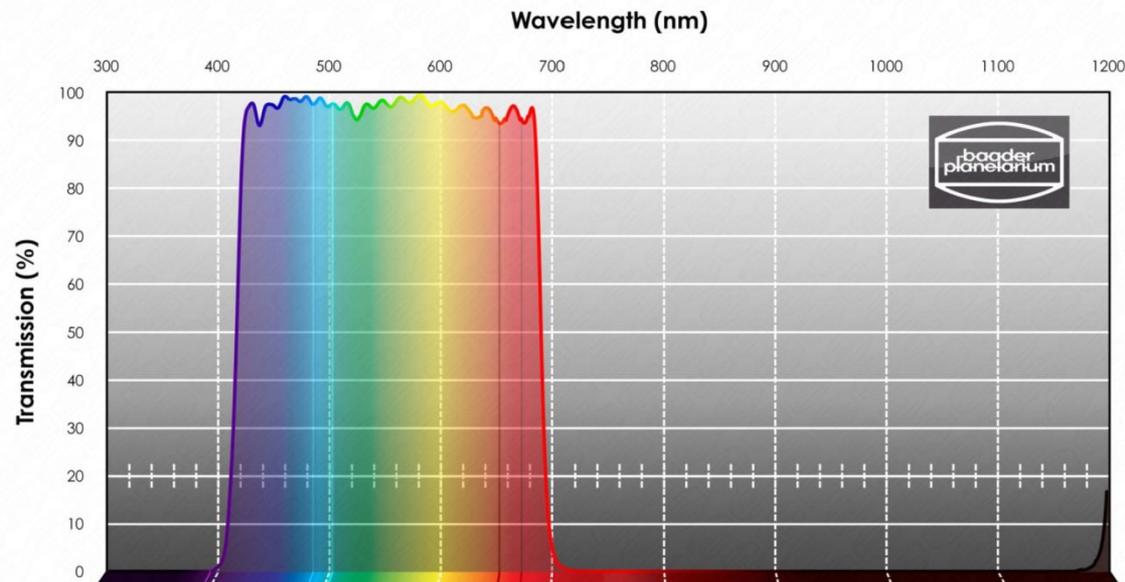
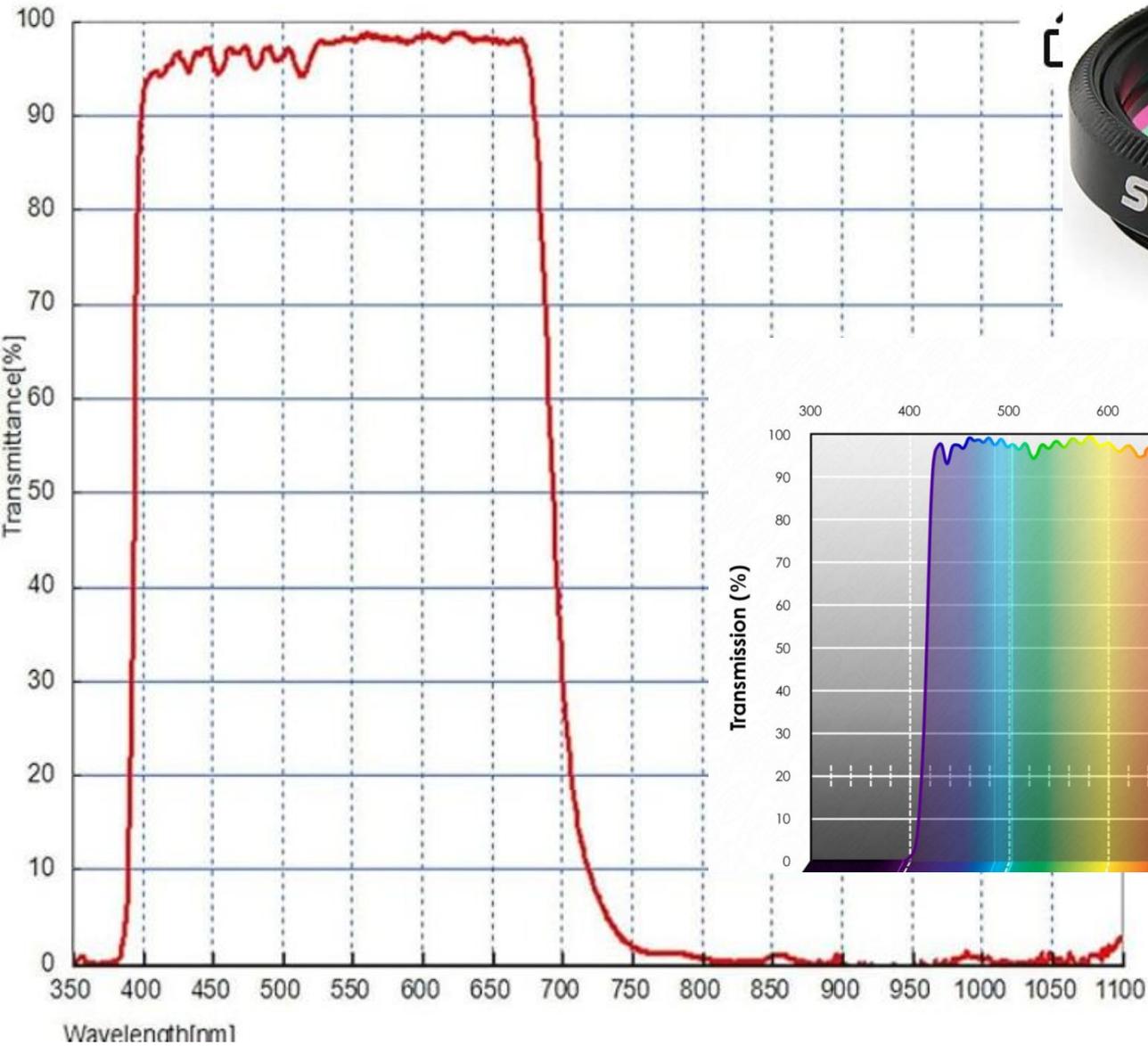
Swan-Band  
Lumicon  
und  
Baader



eine größere Ansicht klicke auf das Bild



Svbony macht IR-  
Interferenzfilter  
für 20€ statt  
90€ bei Baader

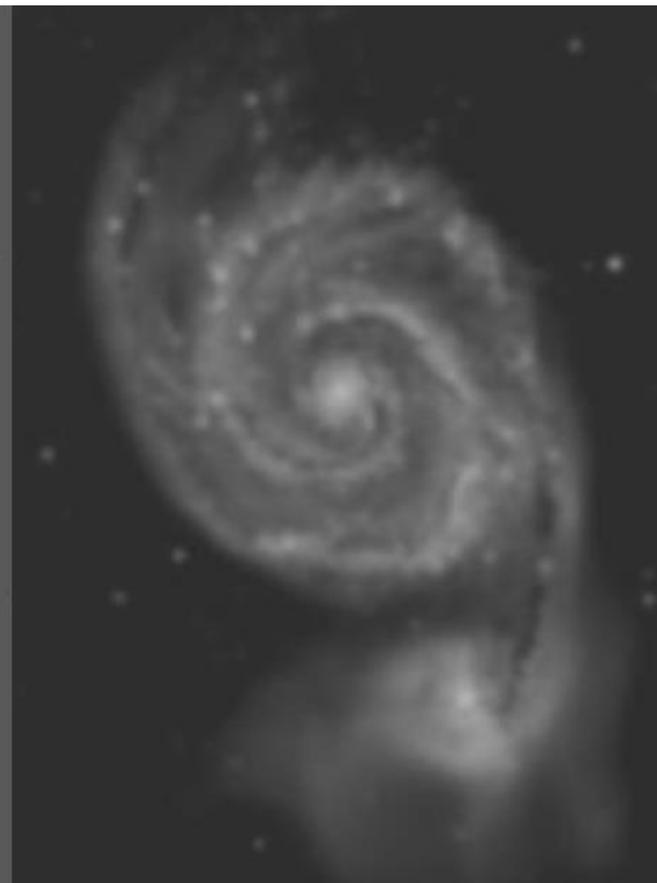
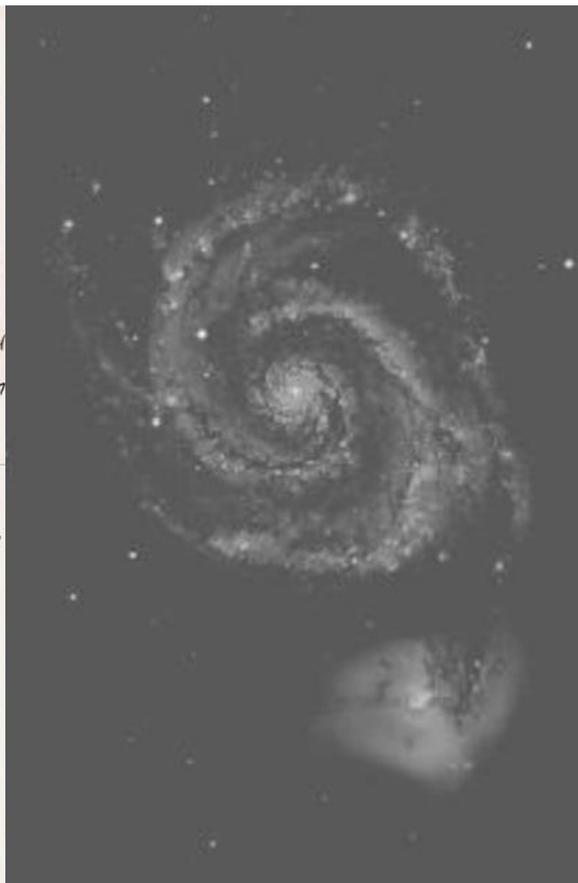
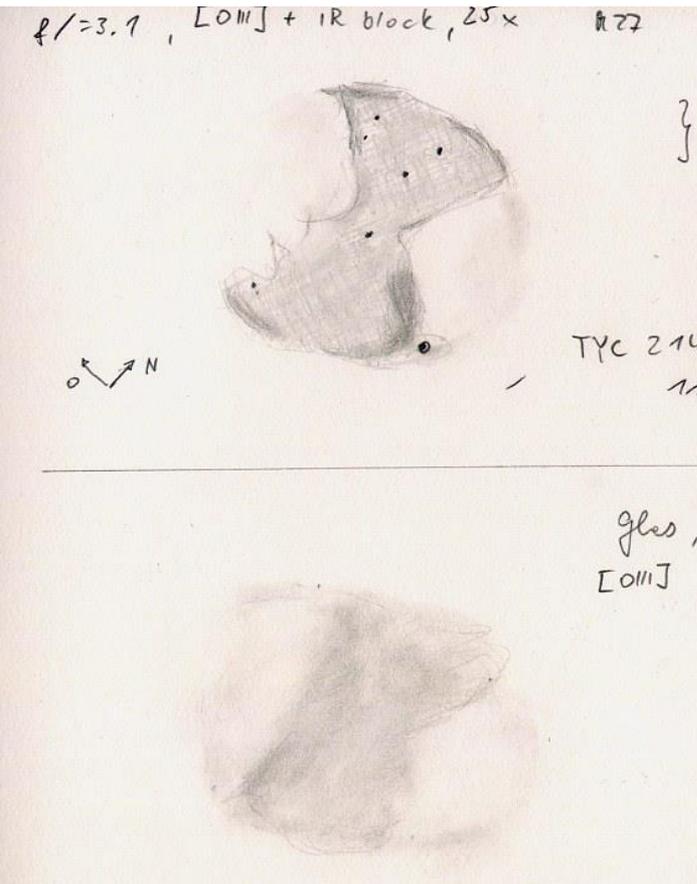


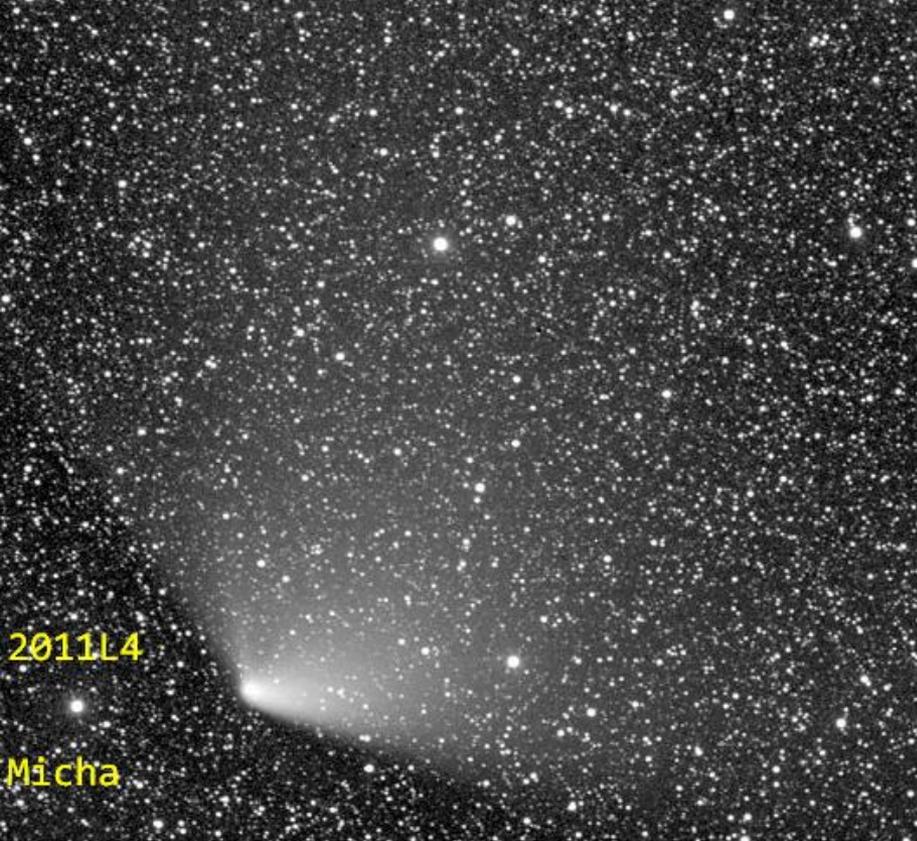
... und IR-Sperrfilter für 15€ statt 65€ bei Baader.



Wie erreichen wir  $f/3$  ? Eine Sammellinse,  $f=5$  cm.

- 12 Zoll + NSG=24 Zoll (jenseits H- $\alpha$ , Mauro da Lio, CN)
- OVNI:  $V=60'000$ , ca. 12 mag, aber es wird ja alles mitvergrößert
- Direktes Sehen bringt Auflösungsgewinn
- Sterne sind viel heller, GC sind leichter, aber anders
- Meinel-Banden ergeben ca. 20 mag/arsec<sup>2</sup>, auch bei dunklem Himmel
- Effekt: Hochauflösende Beobachtung von Objekten hoher Oberflächenhelligkeit, Details niedriger Helligkeit „verschwinden“





Staubreich:

Ohne Filter: etwas besser.

~

Gasreich:

Lumicon: Etwas schlechter.

Baader: Etwas besser.

(Lumicon 25nm, Baader 15nm)

