

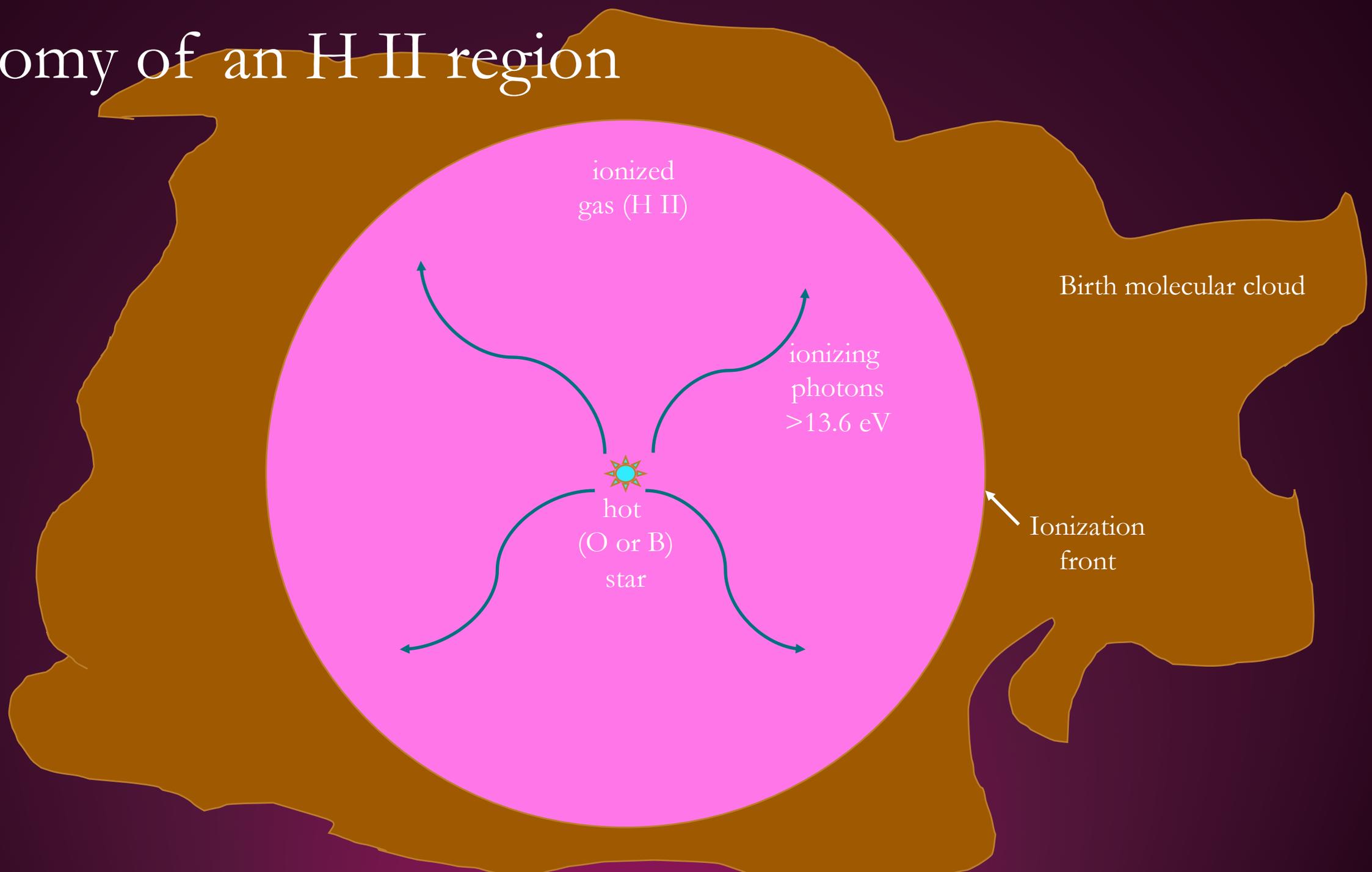
The Zoology of H II regions

ASTR 605
Joe Burchett
8/22/2021

Subaru Telescope (NAOJ),
Hubble Space Telescope, Martin Pugh;
Processing: Robert Gendler



Anatomy of an H II region





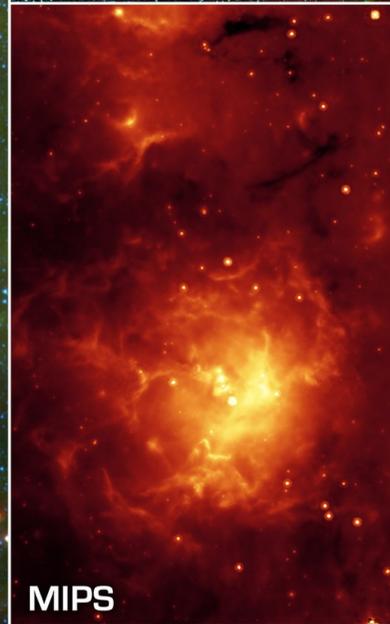
Visible (NOAO)



Infrared IRAC + MIPS



IRAC



MIPS

Trifid Nebula/Messier 20

NASA / JPL-Caltech / J. Rho (SSC/Caltech)

Spitzer Space Telescope • IRAC + MIPS

ssc2005-02a



NASA, ESA, M. Robberto (Space Telescope Science Institute/ESA)
and the Hubble Space Telescope Orion Treasury Project Team

Eagle Nebula

Blue – [O III]
Red – [S II]
Green – H α + [N II]



Credits: NASA, ESA and the Hubble Heritage Team (STScI/AURA)



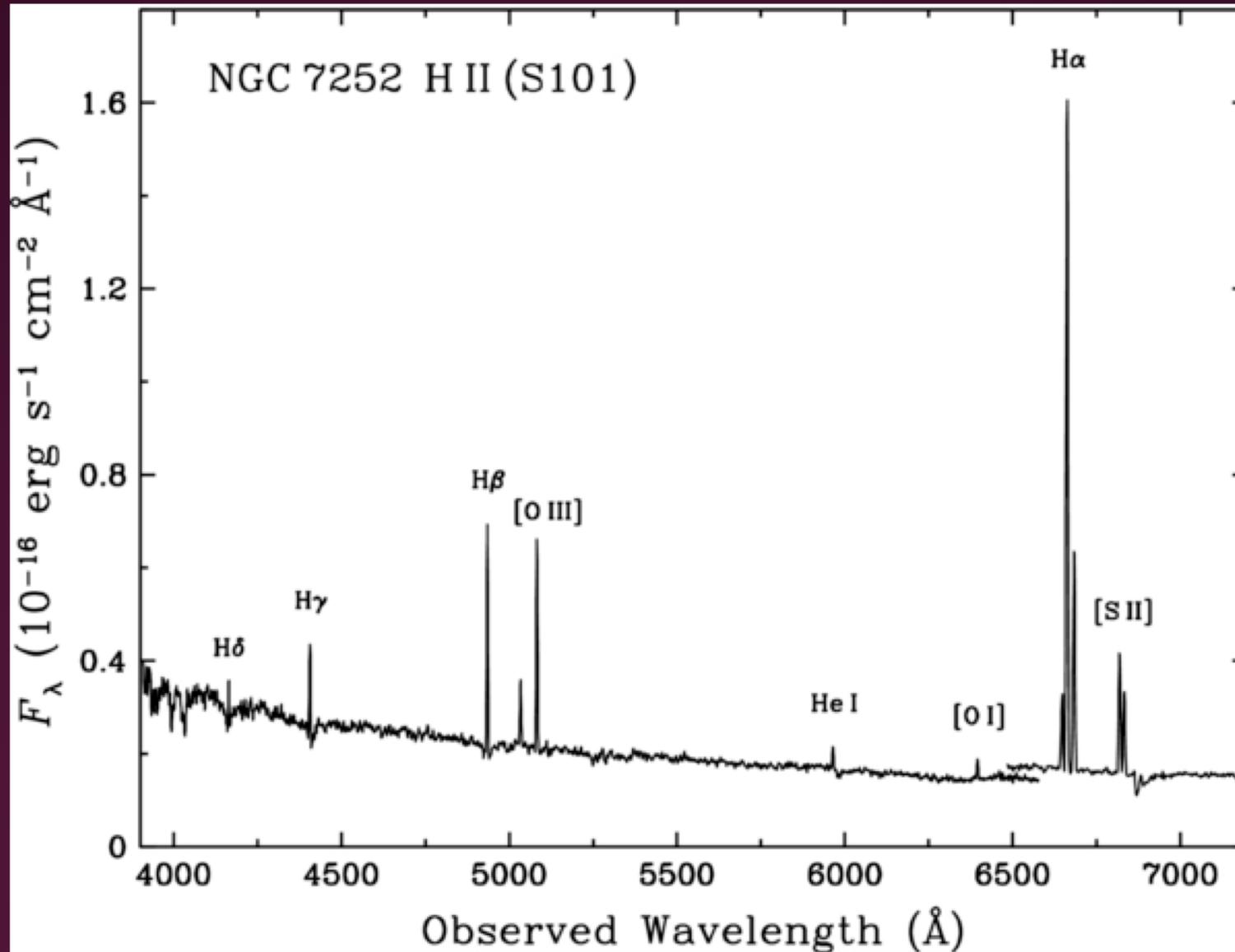
Visible
ESO MPG



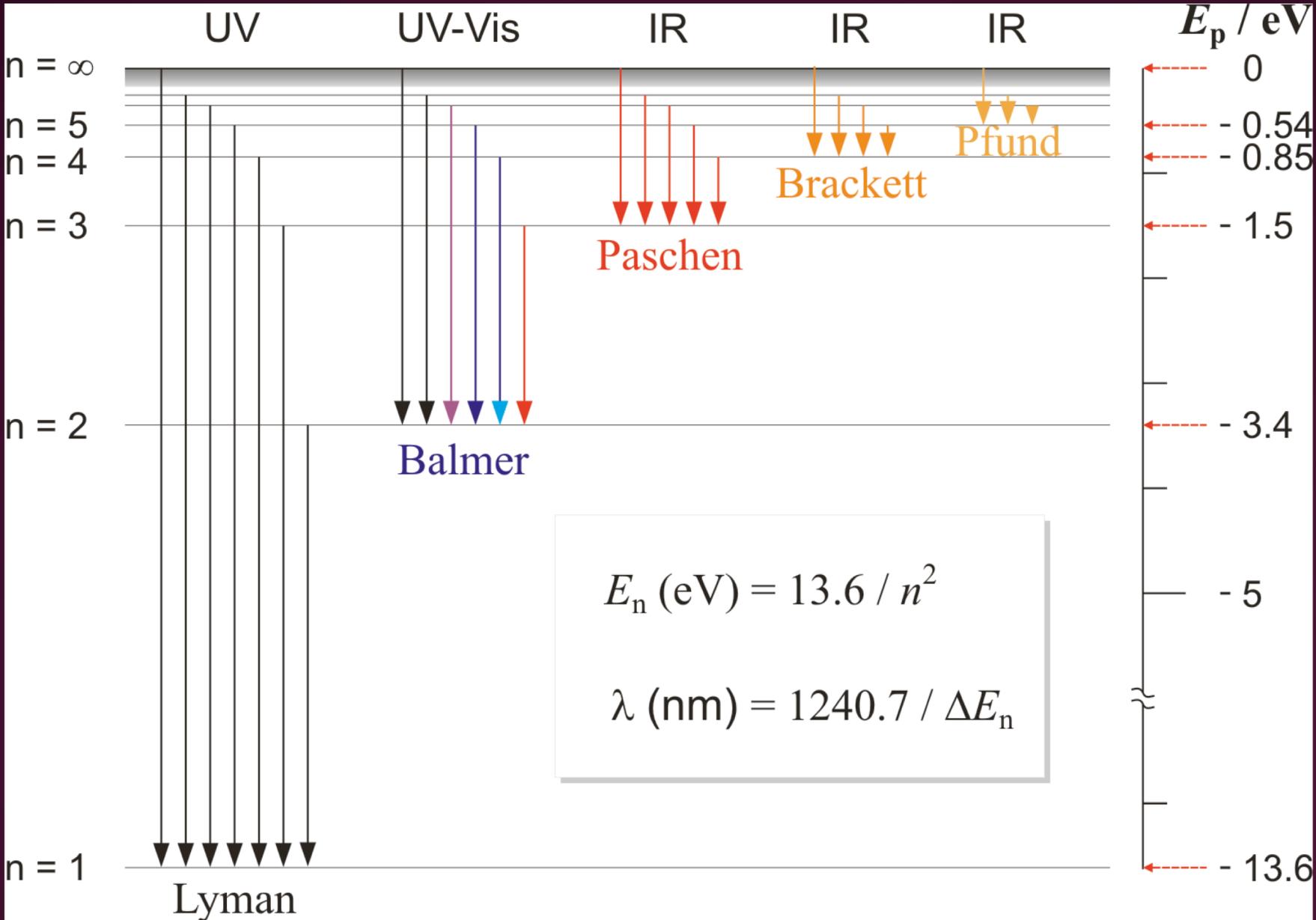
Julian Shroff

Julian Schroff

H II Region Spectrum



Hydrogen energy states and transitions



Photoionization cross-sections

Note hard 'edges' at ionization energy!

At high enough energies, helium ionization can dominate over hydrogen

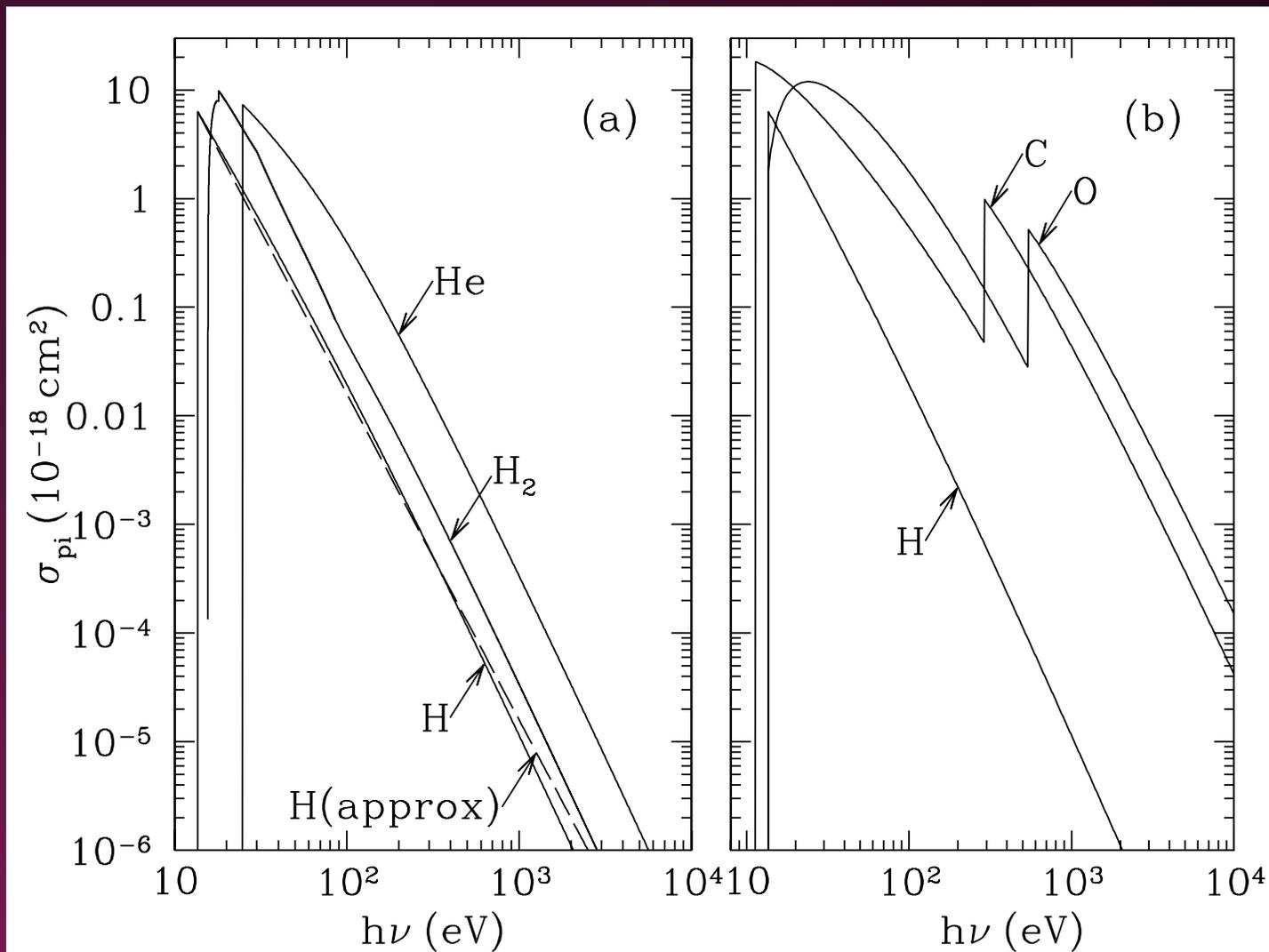


Figure 13.1 Photoionization cross sections for H, H₂, He, C, and O. The dashed line in (a) shows the power-law approximation (13.3) for H.