$$\begin{aligned}
\mathrm{flux} &= 1.02 \times 10^{-9} \frac{\mathrm{erg}}{\mathrm{cm^2\,s\,\AA}} \times (10\text{Å}) \times (0.9) \\
&= 9.18 \times 10^{-9} \frac{\mathrm{erg}}{\mathrm{cm^2\,s}}
\end{aligned}$$

$$\mathrm{E} = \frac{\mathrm{hc}}{\lambda} = 3.61 \times 10^{-12}\,\mathrm{erg}$$

$$\mathrm{N} = 2.4 \times 10^{5} \frac{\mathrm{photons}}{\mathrm{cm^2\,sec}}$$

$$\mathrm{N_{Vega}} = 8.84 \times 10^{5} \frac{\mathrm{photons}}{\mathrm{cm^2\,sec}}$$

$$\begin{aligned}
\mathrm{m} &= \mathrm{m_{Vega}} + 2.5\,\log_{10}\left(\frac{\mathrm{N_{Vega}}}{\mathrm{N}}\right) \\
&= 1.15
\end{aligned}$$