

Answer on Question 55053, Physics / Astronomy | Astrophysics

Question:

It is a cool day in Green Bank (5 deg C), and you are observing a point-source calibrator with the GBT that has a flux density of 1 Jy. However, you measure a flux density of only 800 mJy.

(a) (2 points) What is the observed atmospheric opacity, t_A ?

Solution:

$$\begin{aligned}S_{meas} &= \exp(-\tau_A) \times 1 \\0.8 &= \exp(-\tau_A) \times 1 \\\tau_A &= -\log 0.8 = 0.22\end{aligned}$$

Answer: $t_A = 0.22$