

# Astronomy 423

Spring 2021

# Worksheet #2

Problem: Objects with high brightness temperatures are easy to detect. Calculate the brightness temperature for the radio galaxy 3C286 which is 14.7 Jy at 20 cm and has a size about  $1'' \times 1''$ , and for the core which has a size of about 1 mas and flux density about 1.5 Jy.

Step 1: 3C286 is barely resolved by the VLA. Plug and chug.  
Recall  $1 \text{ Jy} = 10^{-23} \text{ erg cm}^{-2} \text{ s}^{-1} \text{ Hz}^{-1}$

Step 2: The core of 3C286 as resolved by the VLBA at about 1 mas.

Done!