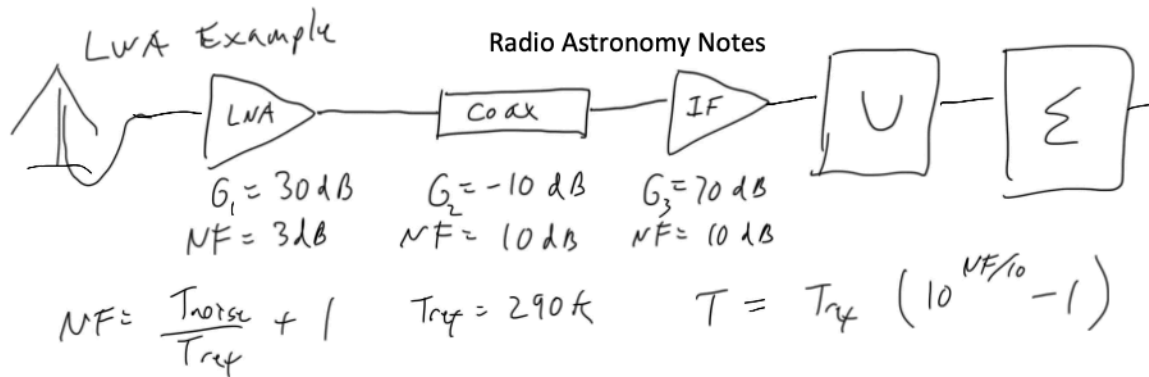


Astronomy 423

Spring 2021

Worksheet #3

Problem: Consider the receiver chain for the LWA. Given the diagram below, calculate the total gain and the noise temperature of the receiver.



Step 1: Calculate the total gain of the receiver

Step 2: Calculate the noise temperatures of the LNA, coax, and IF amplifier.

Step 3: Calculate the receiver temperature

Now consider two more cases for the receiver temperature:

Case 1: T_{LNA} doubles to 580K, calculate T_{Rx}

Case 2: T_{IF} doubles to 5220 K, calculate T_{Rx}

Which amplifier is the most important to keep cool?

Done!