

Workshop 10

1. If the system temperature of the Kuntunse 32 m dish is 120K and its aperture efficiency is 60% what is its SEFD in Jy?
2. Can the Kuntunse 32 m dish operating at 5 GHz with a 50 MHz bandwidth detect the Orion nebula in 5 minutes of integration?
3. Can the Kuntunse dish operating at 6.7 GHz with 0.1 km s^{-1} spectral channels detect the methanol maser line in G9.62+0.20E in 5 minutes of integration?
4. Use the information in Workshop 6 to estimate the antenna temperature that the Kuntunse 32 m dish would measure for the Orion nebula at 5 GHz from a beam dilution perspective. You will need to estimate the brightness temperature of the nebula at 5 GHz (use optical depth here), the angular size of the nebula and the angular resolution of the telescope.
5. If you wanted to fully sample a spectrum of the $\text{H}100\alpha$ radio recombination line observation from the Orion nebula at 6.5 GHz what is the maximum channel width in Hz that you could use assuming the that width of the line was 10 km s^{-1} ?