

Hands-on Neutrino Astronomy & Astrophysics

- Use the tool <https://www.isdc.unige.ch/sedtool/PROD/SED.html> to understand what happens when the physical conditions inside a relativistically moving blazar jet change.
- Notice what happens when you increase/decrease the magnetic field strength, size of the emitting region, Doppler factor, minimum and maximum electron Lorentz factor, and electron spectral index in the presence (absence) of an external field (“EC on Disk”, “EC on BLR”, “EC on DT”)
- For a brief guide to what is happening see Section 8.9.2 of <https://arxiv.org/abs/1202.5949> and for more details the surrounding chapters of these lecture notes.
- Now assume that there are in addition protons in this blazar jet (for simplicity we can assume that they have the same number density, spectral index, minimum and maximum Lorentz factor as the electrons). How does the expected neutrino luminosity of the blazar change with each of the above parameter changes? What maximises the expected number of neutrinos?