Neutrino sources searches with ANTARES

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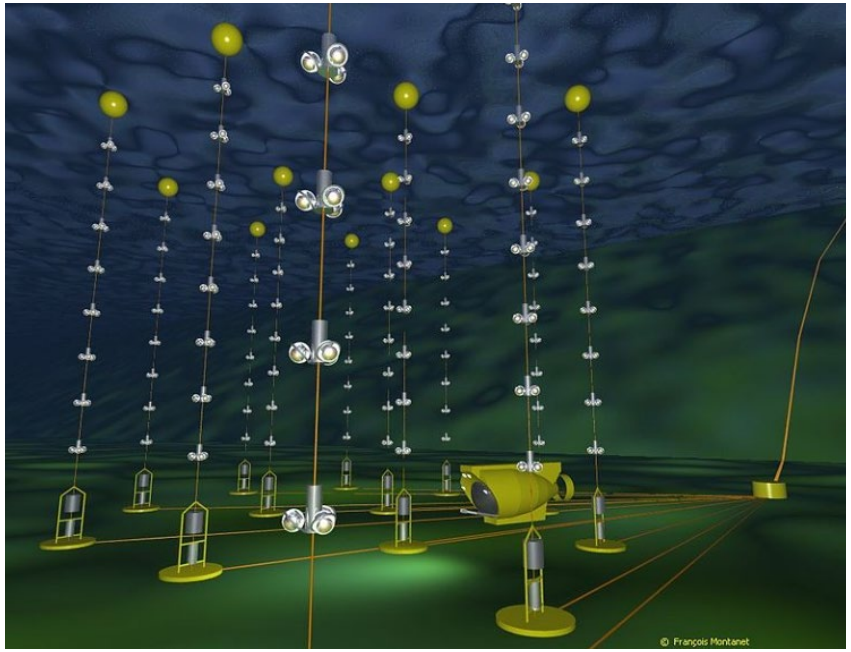
ANTARES telescope

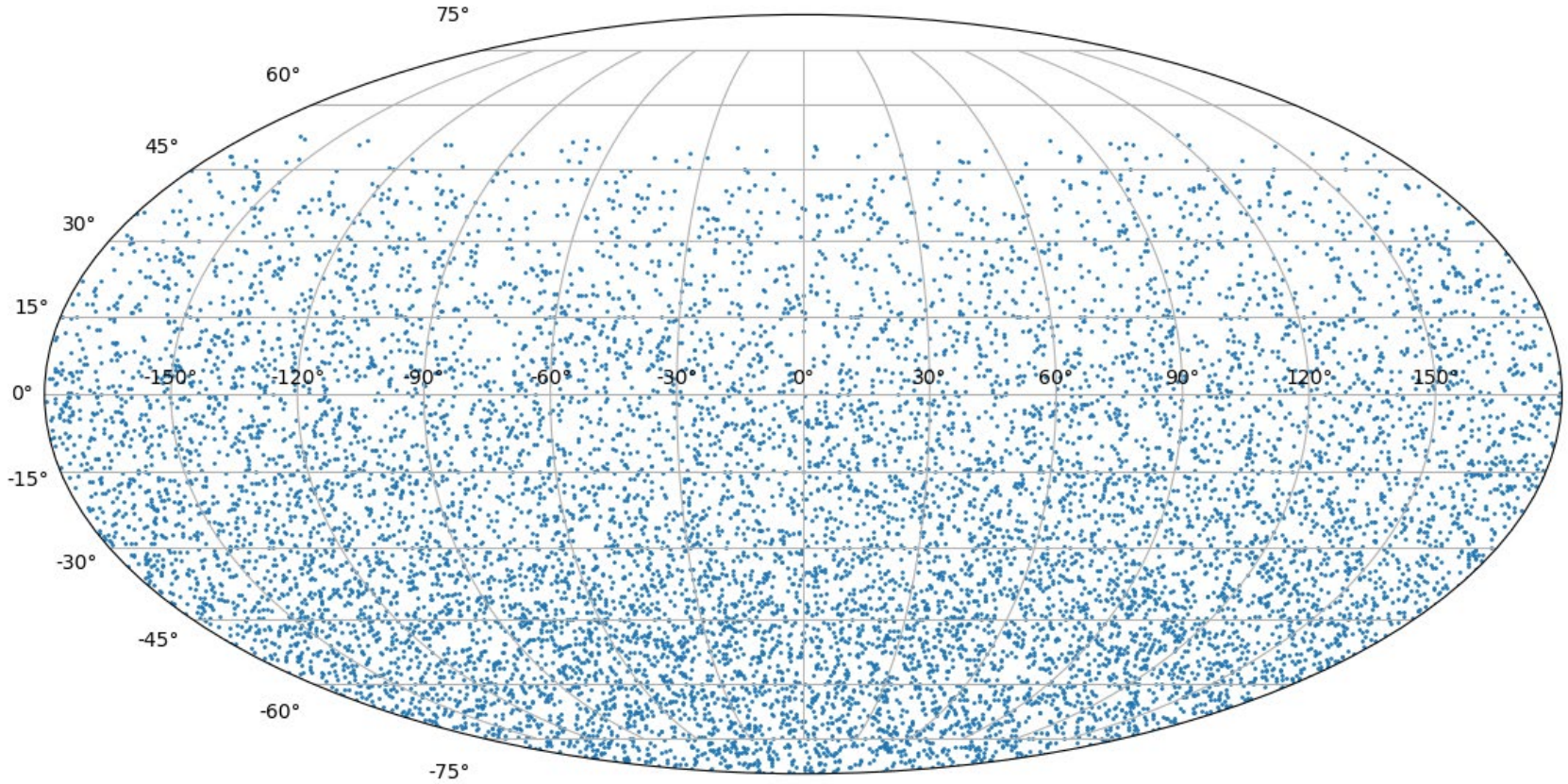
We are interested in detecting upgoing neutrinos (the ones that cross the Earth)



Detect Cherenkov radiation

Toulon France

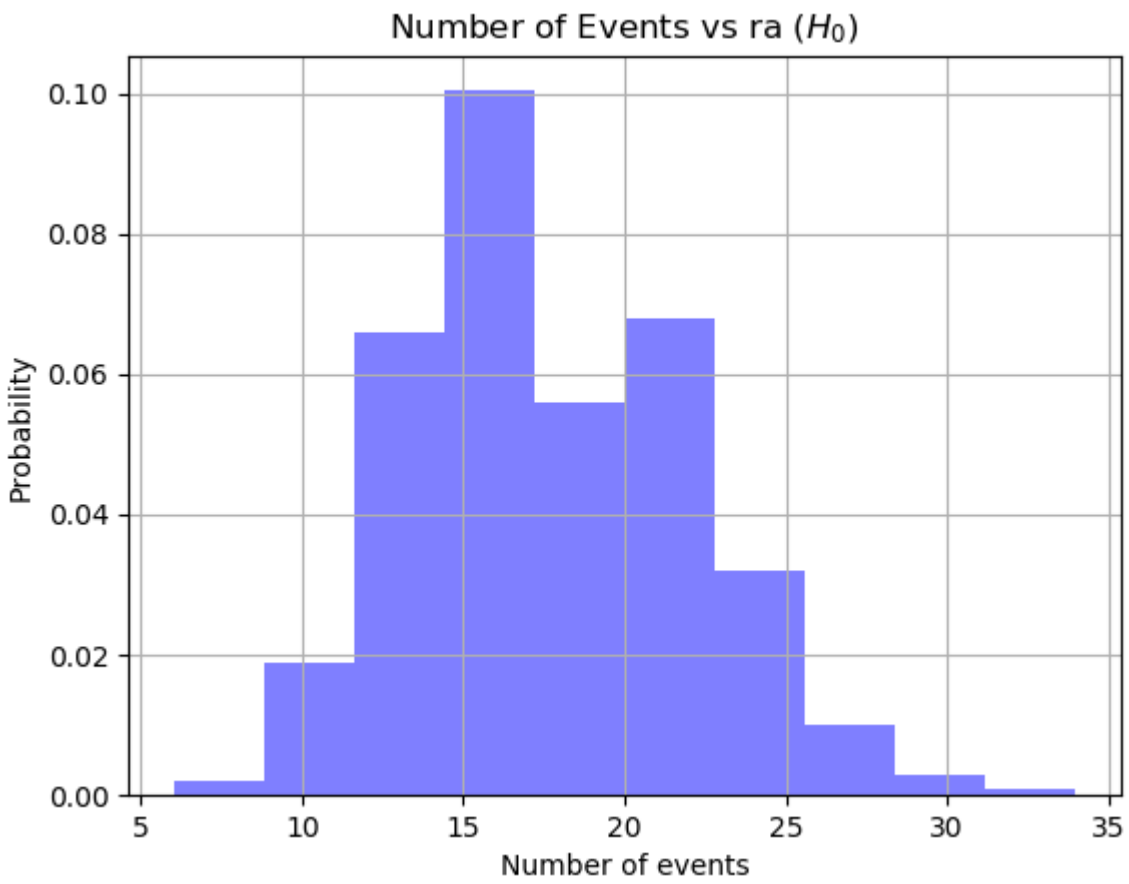
Events detected by ANTARES



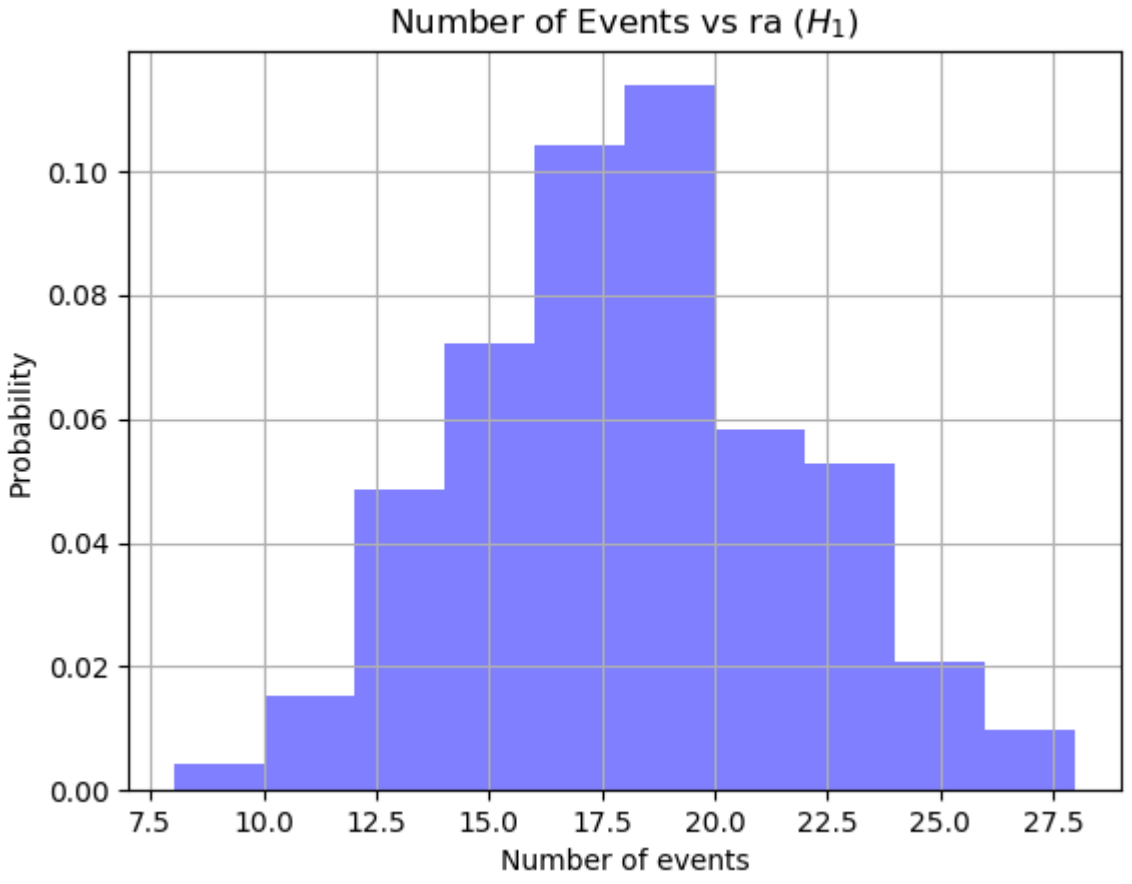
Skymap of the events detected by ANTARES

Scrambled and real data

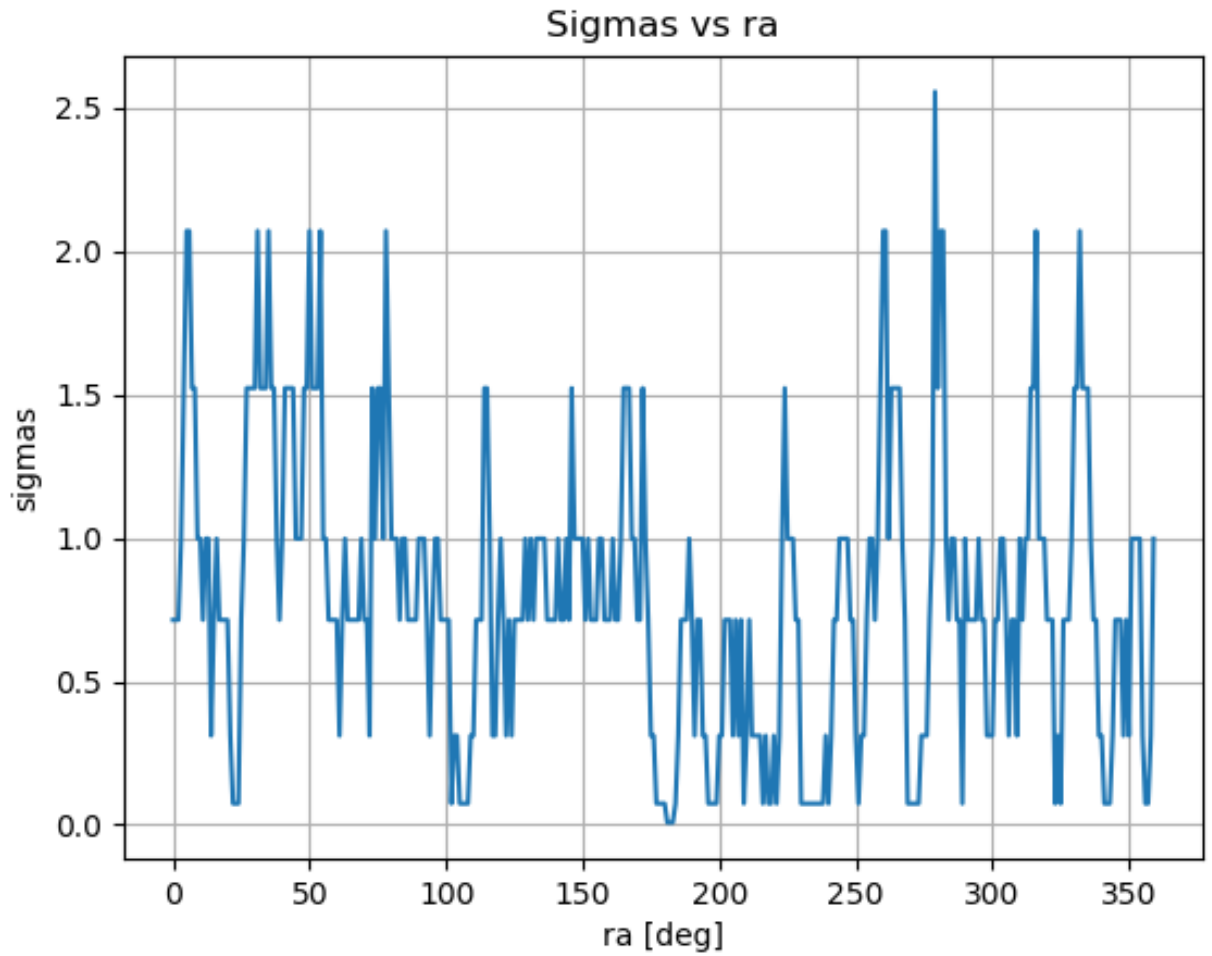
Just background



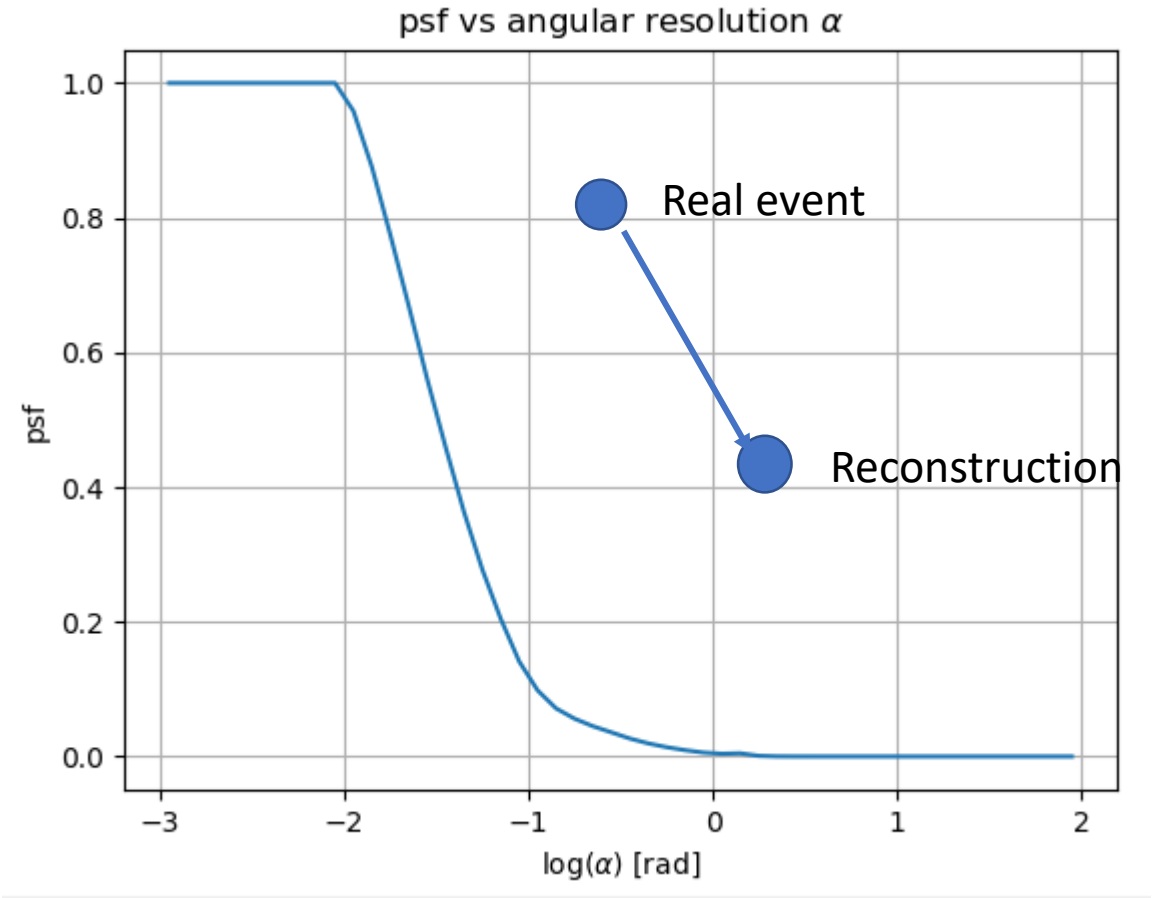
Background + signal

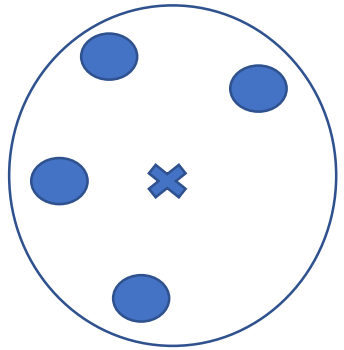


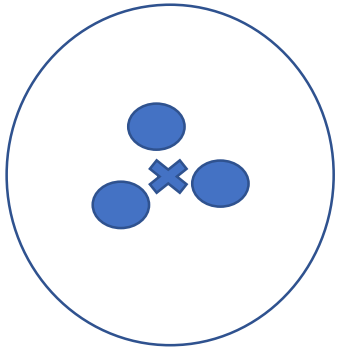
Sigmas as a function of ra



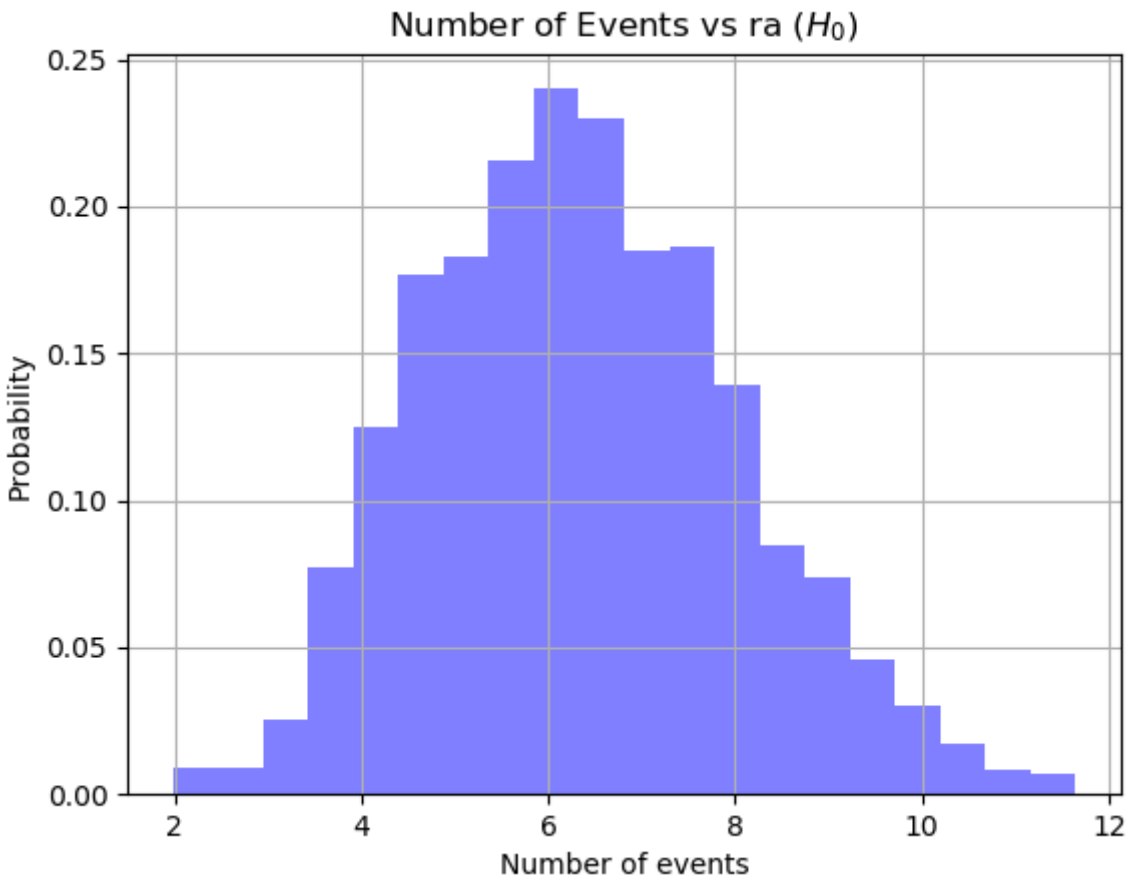
PSF as a function of the angular resolution

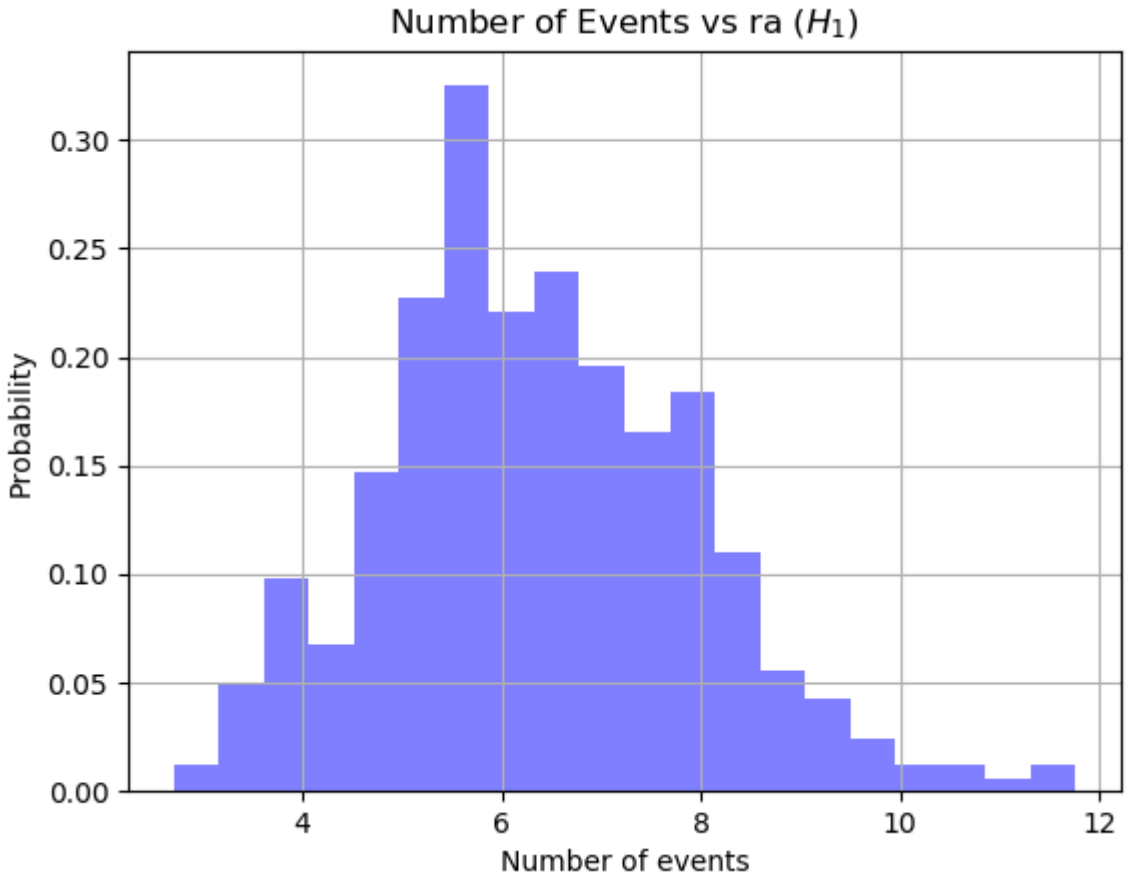




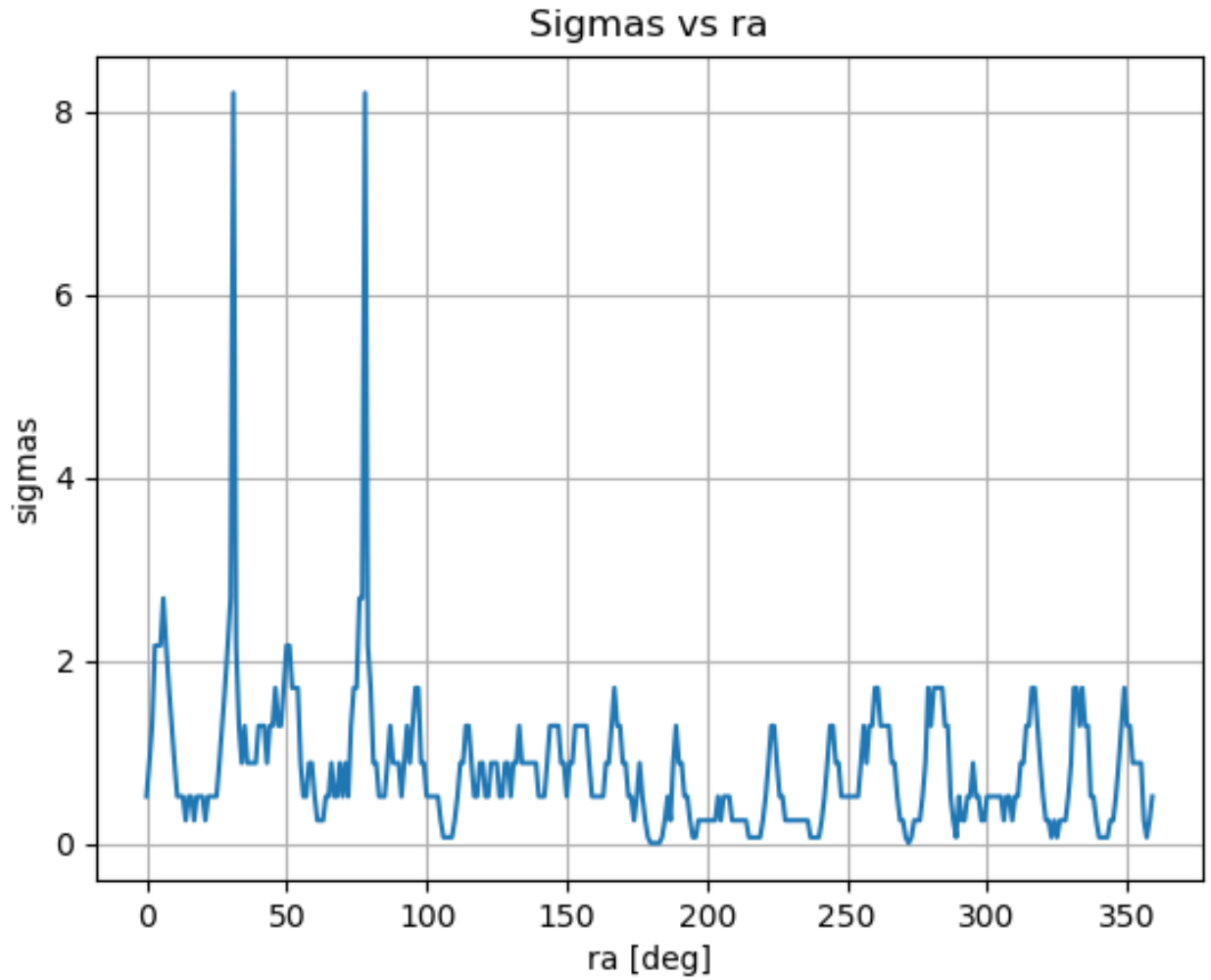


Scrambled and real data with PSF

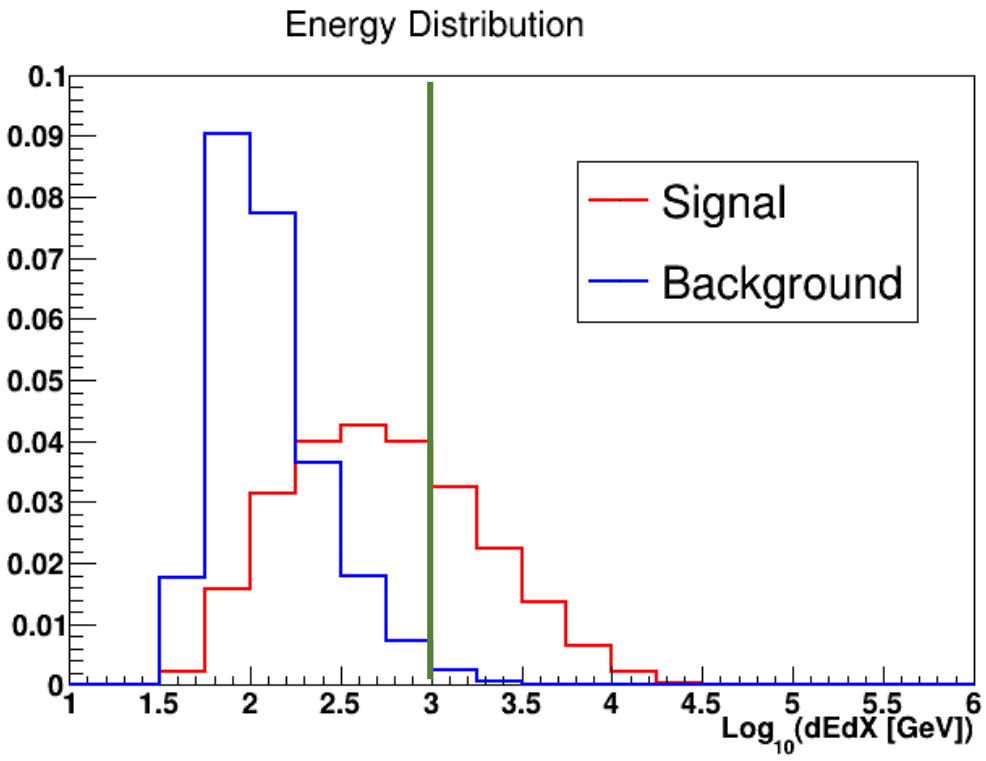


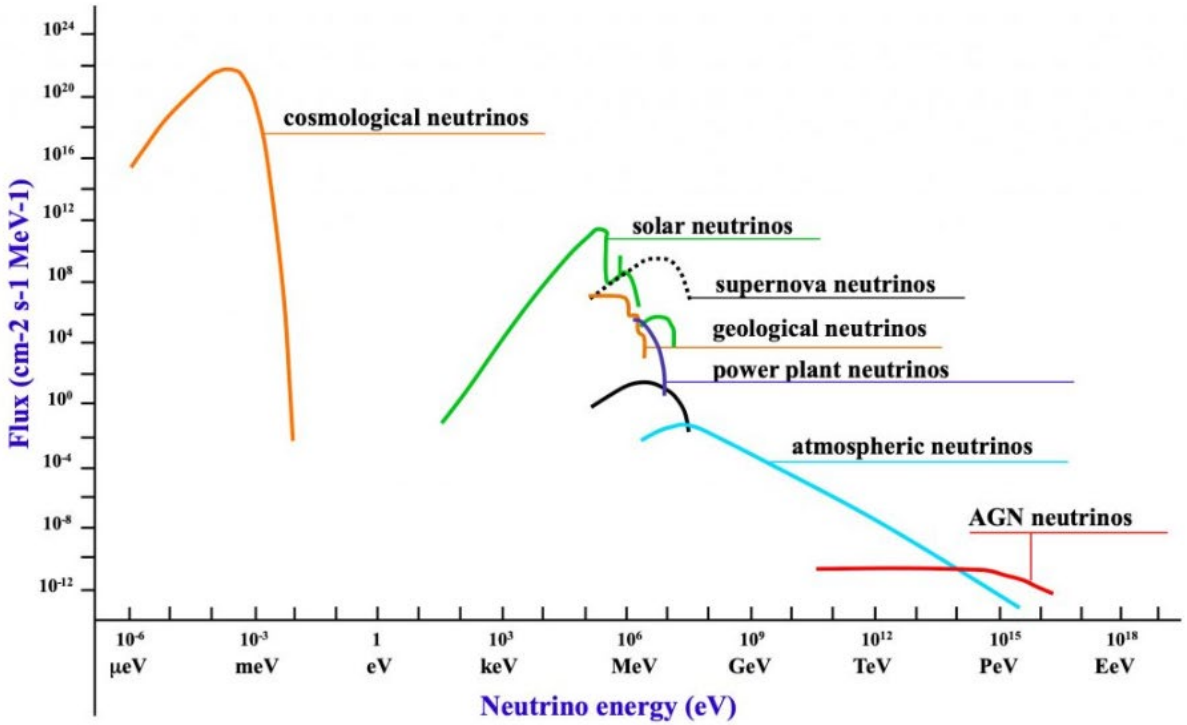


Sigma as a function of ra with PSF

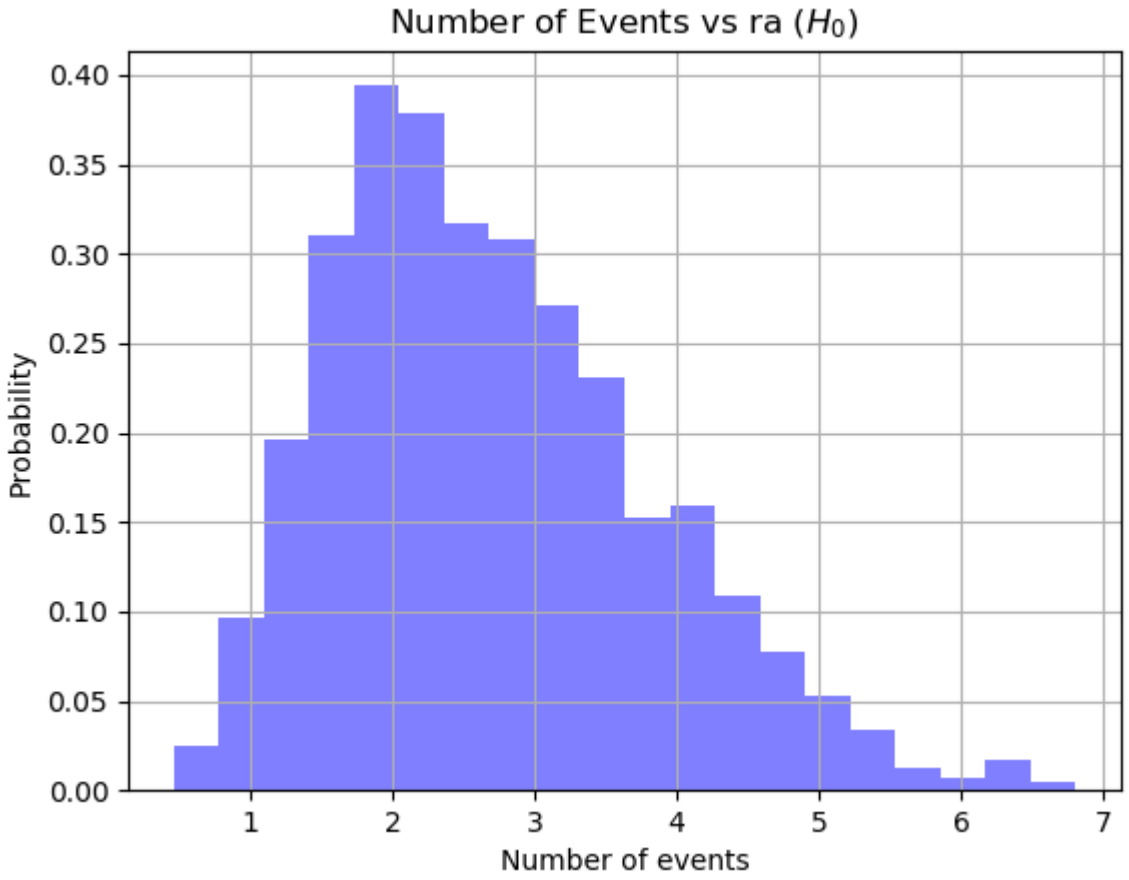


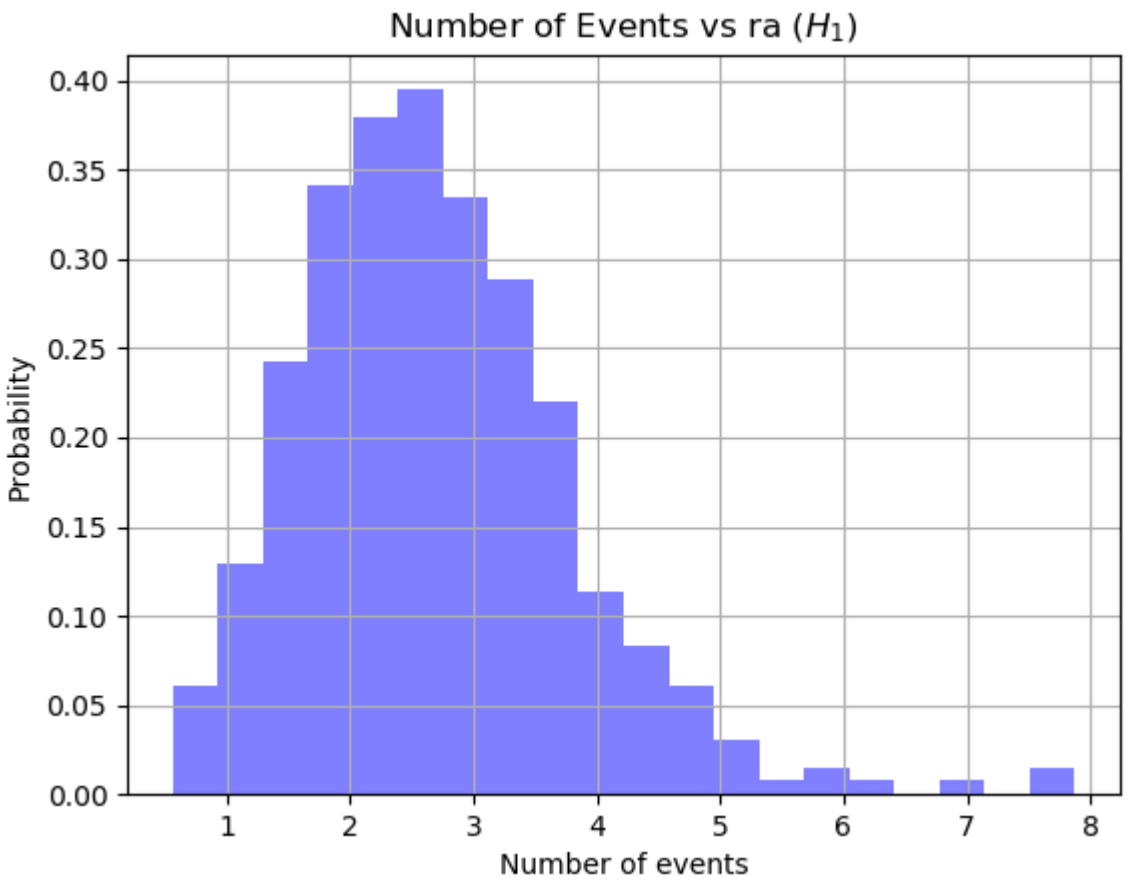
Background vs signal energy distribution



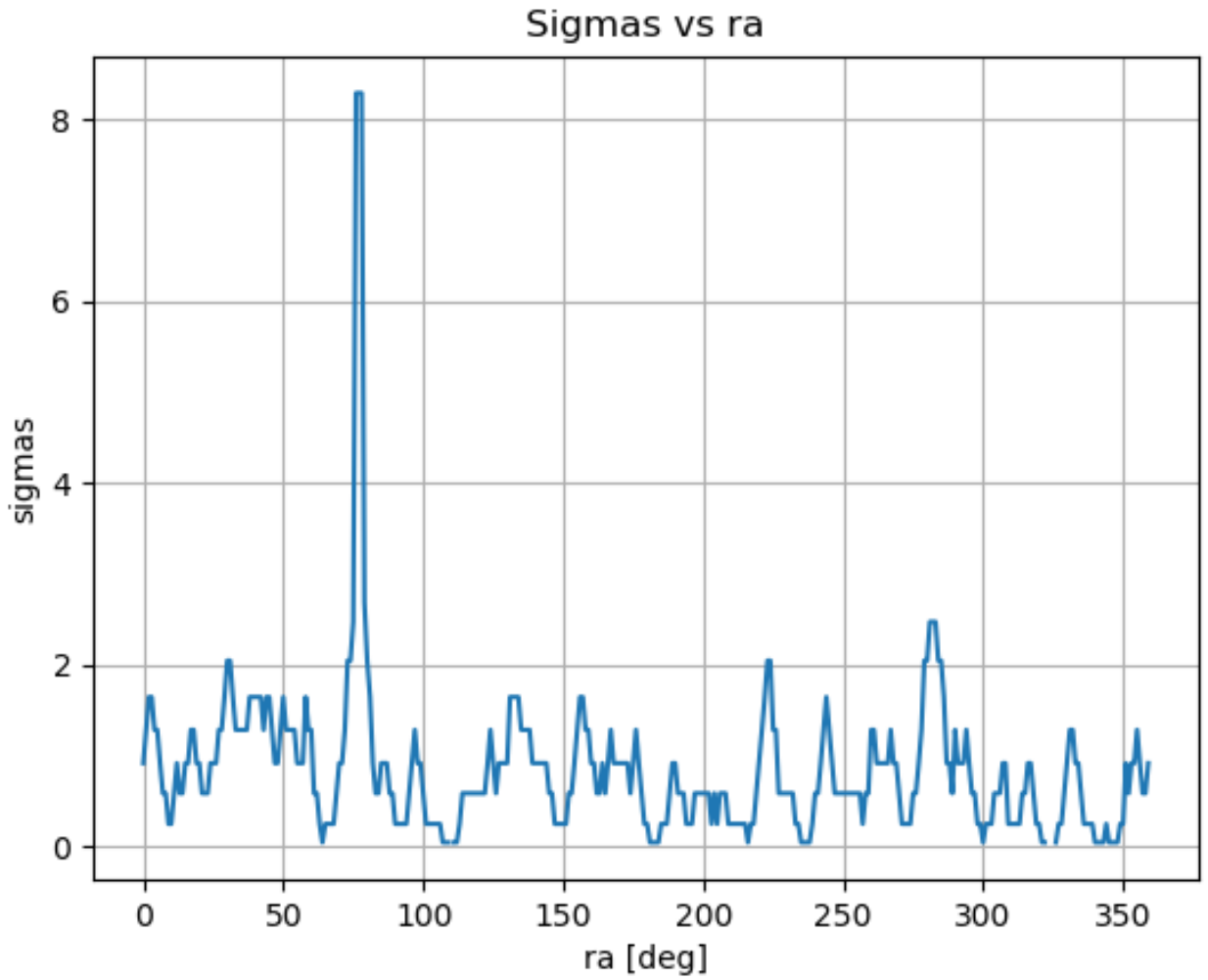


Scrambled and real data with PSF and energy cut

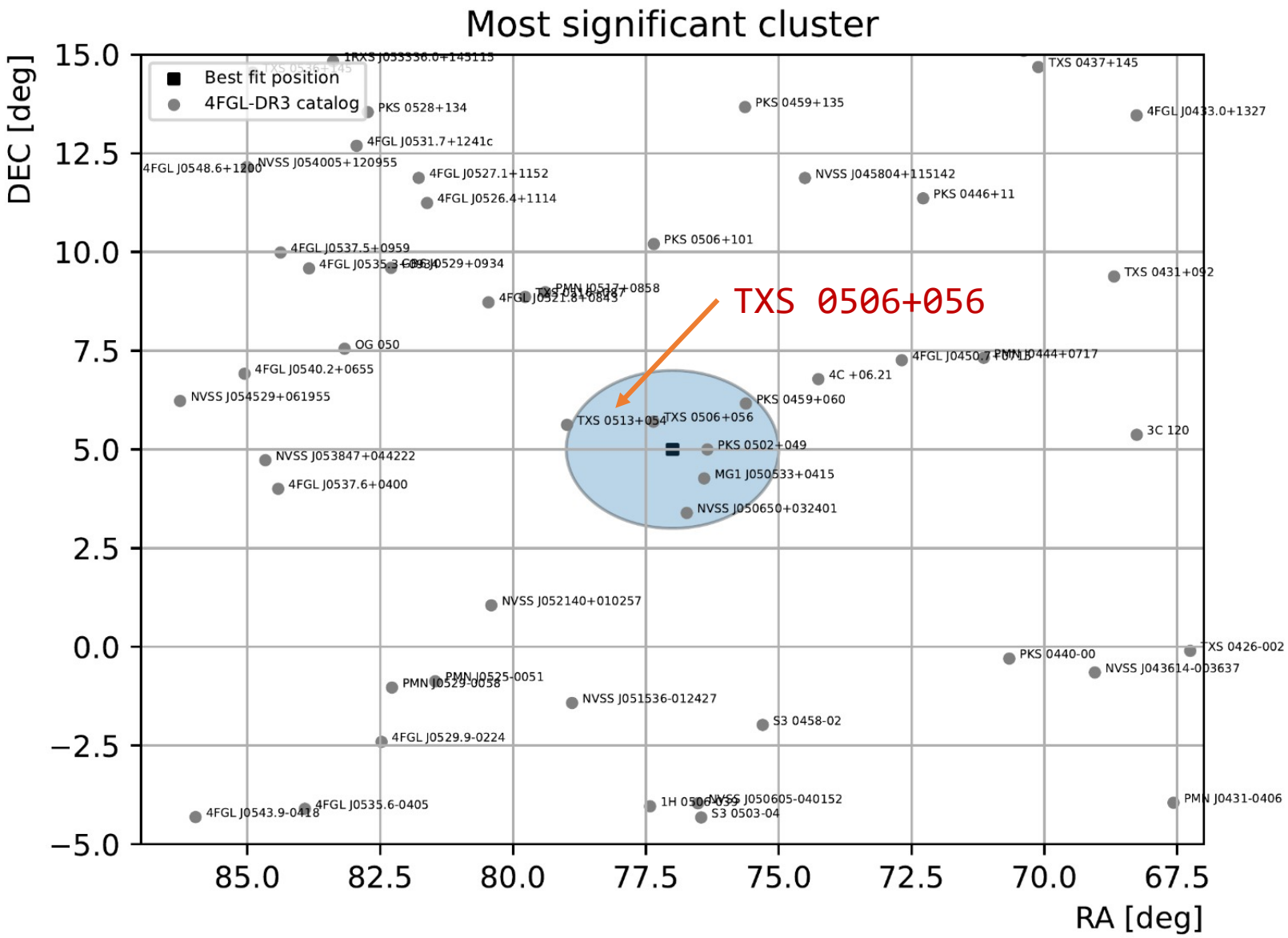




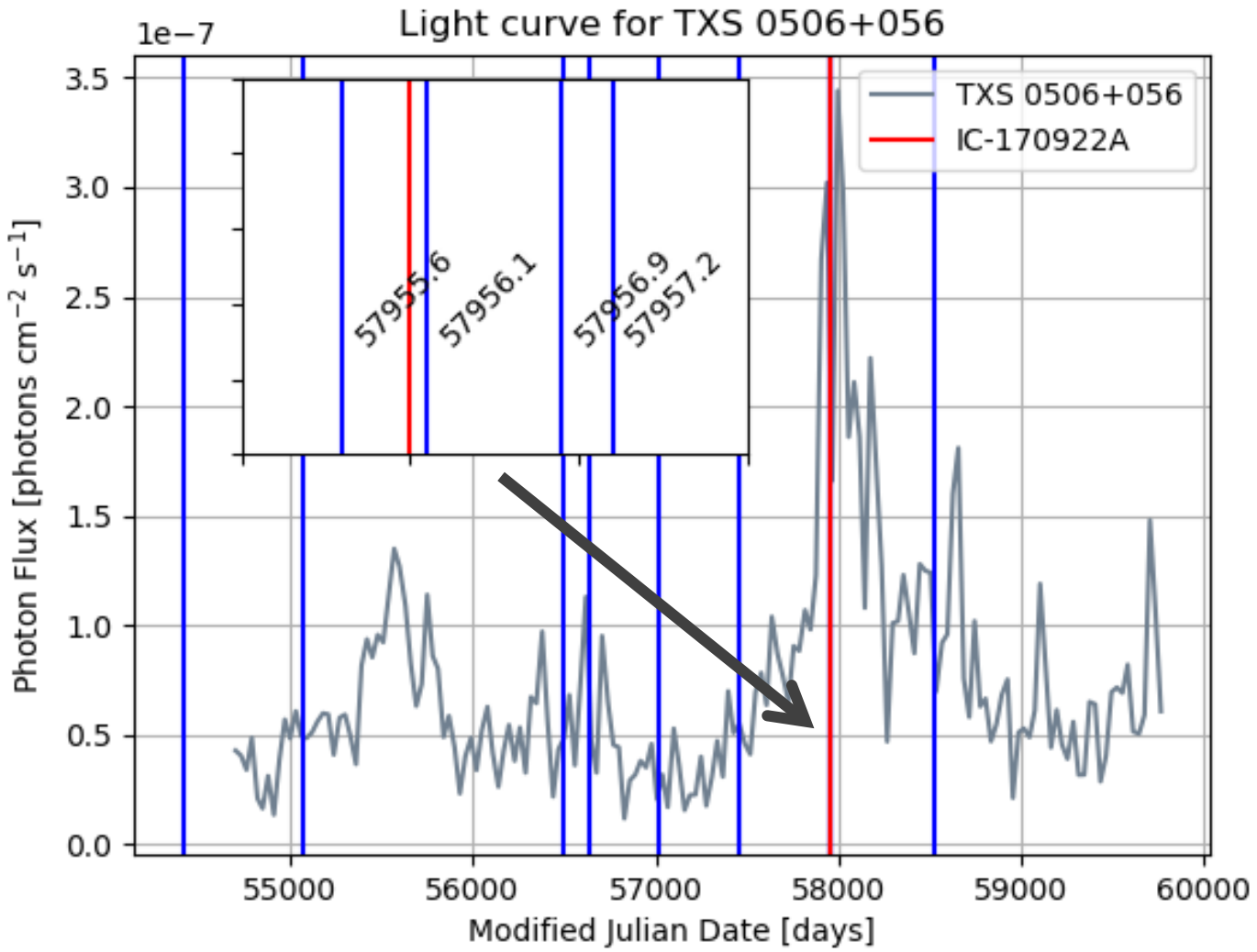
Sigma as a function of ra with PSF and energy cut



Looking on the catalog



Light curve for TXS 0506+056



Conclusiones

- Multimessenger study with ANTARES data in a declination band
- Started with simple analysis comparing just event excesses (binned analyses)
- Moved on to a similar method taking into account angular information. We found two significant directions
- Improved method adding energy information. One of the clusters mostly driven by background dissapeared
- Found a significant neutrino acumulation around blazar TXS 0506+056
- Studied temporal profile of the events founding a potential temporal correlation with IceCube alert and gamma ray flaring period