Problems and their solutions while using Ctools and Gammapy

We were not able to construct events file as required

- Initially we were facing problem that gammapy was using **Hdu and Obs index** files to define observations table for spectrum analysis.
- But later they solved the issue and we no longer need to create the hdu and obs index file separately we can merge multiple files with different **obs ids**.
- Only problem is we have to every time redefine the headers of events file to specify obs id and path to IRF file.
- In case we can also create hdu and obs index file, we generated a new ipython notebook for it.

We were facing problems with background modelling

- So we first tested the resolved events file issue with crab data and got some decent spectrum results.
- But when we tried with **M82, NGC253 and ARP220** we were getting some offset error while **background modelling**.
- With the help of Atreyee Sinha from gammapy we were able to reach the cause of the error.
- The problem was with the events file which we creating apparantly gammapy use **Reflected-background modelling**.

Re-evaluation of XML file

- So while comparing XML files of M82, NGC253, ARP220 we found that their were few things which appeared odd compared to **crab xml** file.
- First was the scale in prefactor which has a technical issue in documentation they have mentioned to specify in **Mev units** but while calculating scale they actually need the power with 10^6 factor.
- Second was that while creating events file using XML file in XML file we specify the actual position of the source but during simulating the events we need to provide position with a small offset and also take care of the the energy limits which we provide.

Spectrum Analysis

- After resolving previous issue we generated **spectrum** for 8 days with two file of 4 days each.
- But spectrum result depends on various factors like how much offset we took while simulating events file.