IceCube public data

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Public data releases

- Several public data releases available to everyone
  - https://icecube.wisc.edu/science/data/access
  - Many made in support of published analysis
  - New data release focused on generic neutrino astronomy samples
    - 3 yr all-sky PS data sample
    - https://icecube.wisc.edu/science/data/PS-3years

3 yr data sample

- All Sky PS sample - thru going muon tracks
    - Background dominated!
        - Northern hemisphere: atmospheric neutrinos
        - Souther hemisphere: atmospheric muons
    - For each event:
        - Time (MJD), log10(Muon Energy), 1 sigma angular uncertainty radius, RA, DEC
- Includes tabulated neutrino signal effective areas
    - Can be used to obtain expected number of events given a modeled neutrino spectrum

Python notebook

- I’ve put together a simple python notebook in Google “Colaboratory” system to explore the data
    - I’ve added a link to a shared NB in the Slack channel
- Plots keys values, makes skymaps
- Demo….

Point Source searches

- As these samples are background dominated
- We tend to perform point source searches by scrambling data in time to quantify background expectations at each point in the sky
    - Astronomy at the South Pole is made easy for us:
        - Randomize the RA values
- Compare data to expectations for scrambles and look for excesses