

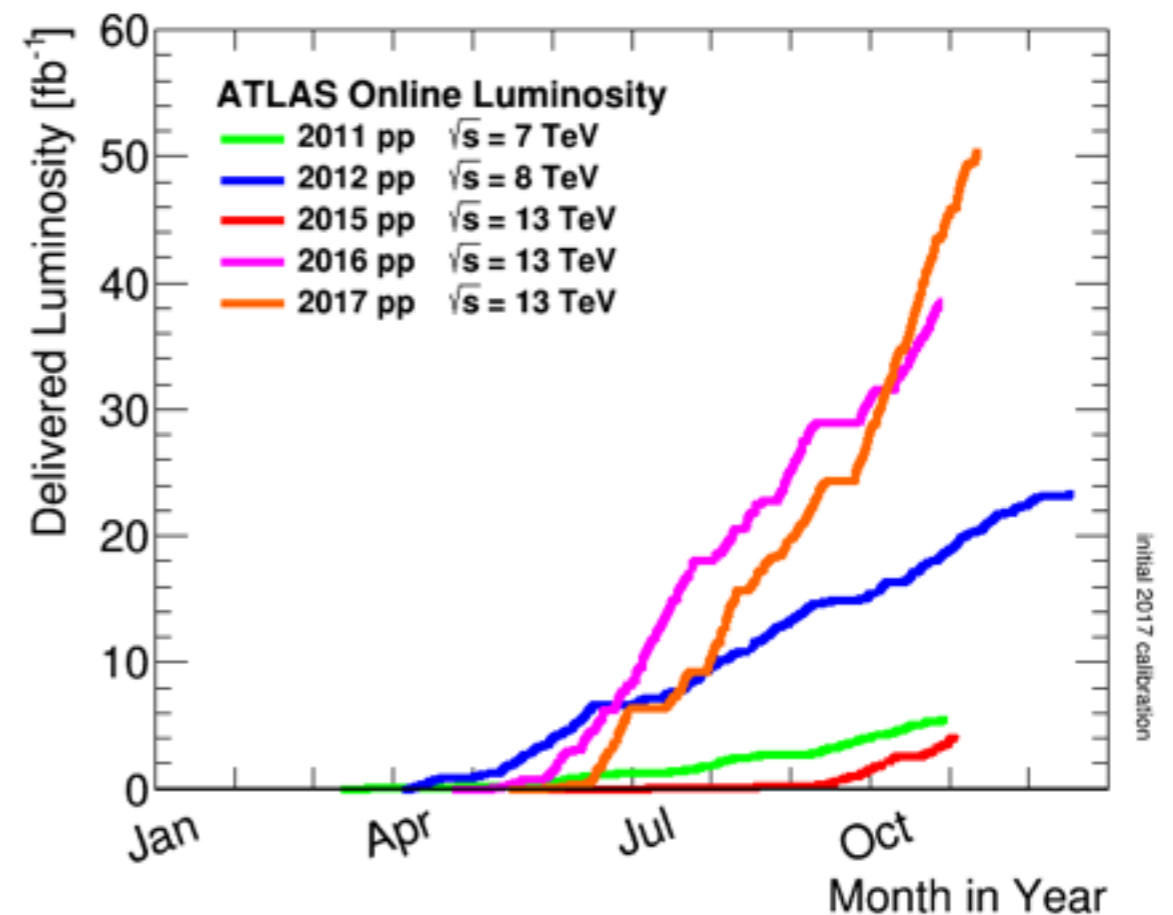


Closing remarks, Future plans & Discussion

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- First LHC inter-experiment workshop back in 2011, coordinated by Stephen Gibson
 - RD50 input until Albuquerque 2013
 - Measurements and studies using Run 1 data
 - Despite the modest integrated luminosity, many important results reported.

- Since then we've had several years of Run 2 @ 13 TeV and $\sim 100 \text{ fb}^{-1}$ delivered luminosity



- Radiation damage is increasingly impacting our silicon detector systems, as evidenced by this morning's presentations.
- We now have $>100\text{fb}^{-1}$ delivered luminosity, so we think an excellent time to resurrect an inter-experiment collaboration and share our experiences and knowledge.
- Why is it important to study and understand radiation damage effects at the LHC?
 - Our radiation damage models have been developed based on experiments in irradiation facilities so there is strong motivation to benchmark and validate these models in the actual complex radiation fields of the LHC.
 - Improving the modelling and simulation of radiation effects is crucial for developing the technologies needed for the HL-LHC upgrades and future colliders (e.g. FCC)
 - Accurate modelling also important for predicting the performance of the current silicon detector systems for different running scenarios over the lifetime of the LHC, with impact on cooling, V_{dep} , CCE etc.

- In between now and the next RD50 meeting we would like to have a 1.5 or 2 day inter-experiment workshop, at CERN **preferably early March.**
- We would also like to extend scope of workshop to include radiation effects on electronics and photonics, and go into more detail on the simulations

Inter-Experiment Workshop on Radiation Effects in Silicon Detector Systems

- We will continue having sensor focused inter-experiment session during RD50 workshops
- Publish results and conclusions early 2019 to include Run 2 data

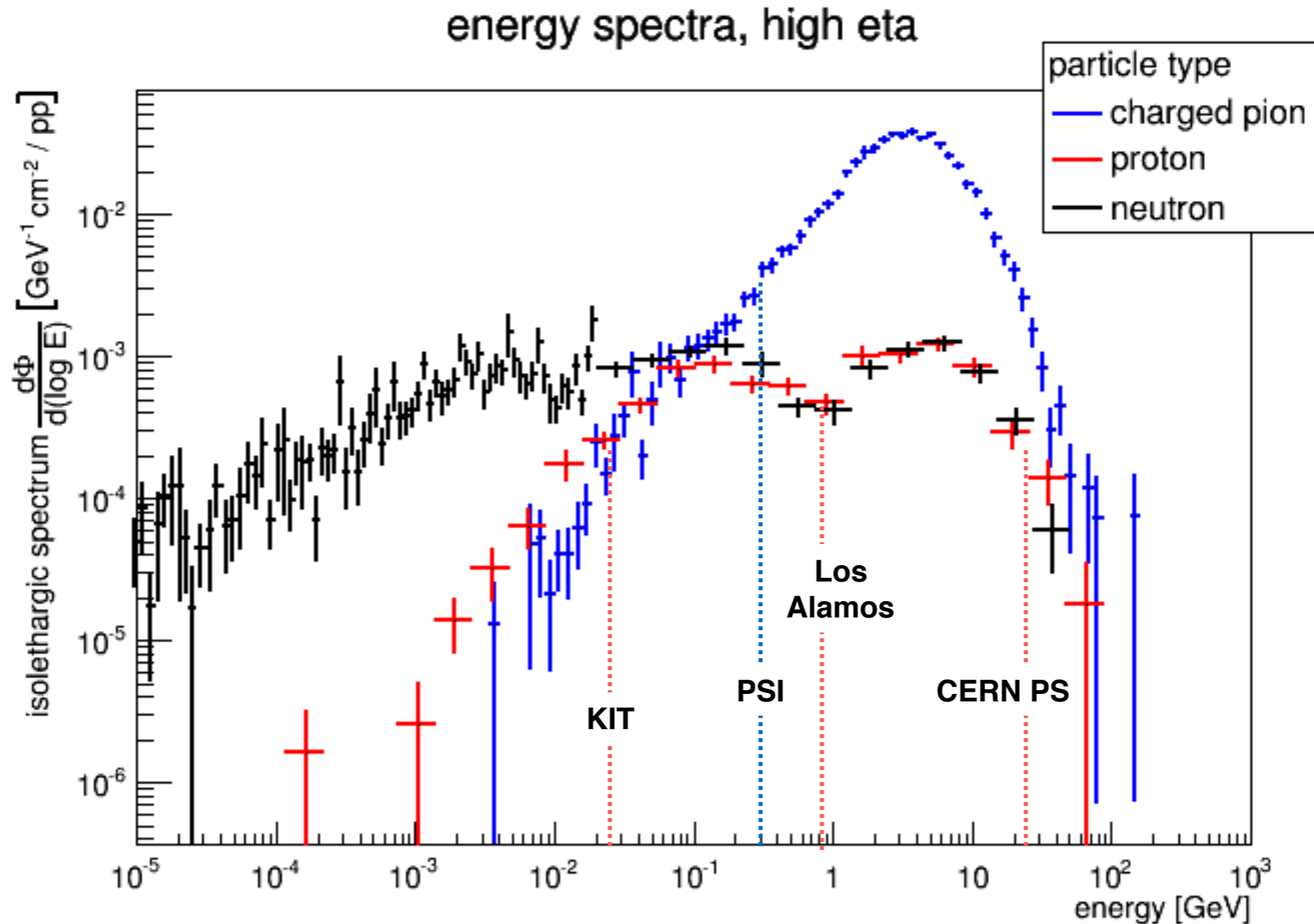
Inter-Experiment Workshop on Radiation Effects in Silicon Detector Systems (1.5 or 2 days)

Possible workshop format?

- Sensors (1 day)
 - Similar to today's RD50 format but more time for detailed talks and discussion
 - Thoughts on how to improve workshop welcome!
- Electronics and photonics (1/4 - 1/2 day)
 - For example SEUs. Operational effects during LHC running, and mitigation. Unexpected radiation effects?
- Radiation fluence and dose simulation (1/4 - 1/2 day)
 - FLUKA, G4, MARS ...
 - Simulation versus measurements (eg detector sensors, RadMons, TimePix)
 - Common tools

Finally big thanks to colleagues in RD50,
especially Michael, for supporting this new inter-
experiment initiative and inviting us to be part of
your week.

Discussion ...



- LHC radiation fields are complex. Important to experimentally test the model predictions - which are based on measurements at irradiation facilities (and particle simulations at high energy).
- One can argue that the radiation fields at the LHC will eventually become a testing laboratory!