On-orbit energy calibration of the calorimeter on the ISS-CREAM instrument using the boronated scintillator detector

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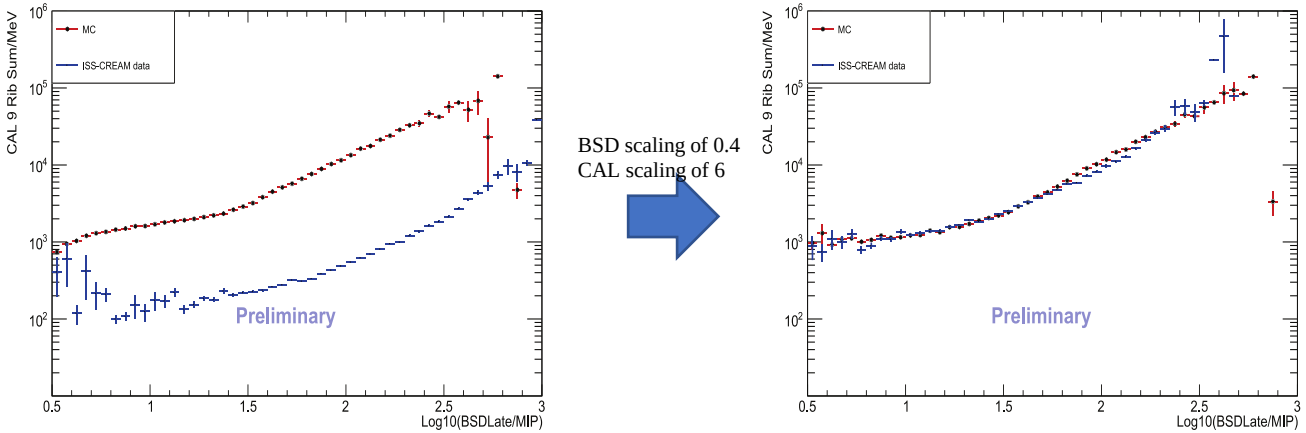
Why?

- Preliminary differential spectrum lower by a factor of 100 using calorimeter (CAL) as energy estimator, while a spectrum made using the boronated scintillator detector (BSD) is close to the reference value.
- No record of end-to-end CAL calibration using ISS-CREAM electronics.
- No non-interacting Fe nuclei found for absolute energy scale calibration.



How?

- Rely on well developed GEANT4-based Monte Carlo (MC) simulation model.
- Use carefully selected HiZ dataset. MC events go through the same selection process.
- Plot CAL energy deposition against BSD late signal.
- Scale appropriately until ISS-CREAM data agrees with MC.
- The choice of scaling is confirmed of having a minimized χ^2 with a preliminary parameter scan
- Current best is at CAL scaling of 6. However, a scaling factor between 6 to 8 is generally possible.

Future work

- Scan on a finer grid
- Find the most probable scaling factor and determine the region of confidence