

Research statement summary for the Intensity Frontier Fellowship IFFELLOW_2016_2

Gianantonio Pezzullo
INFN of Pisa, Italy

December 27, 2016

I am seeking a Fermilab Intensity Frontier Fellowship to spend 1 year at Fermilab to give a leading contribution in the Mu2e experiment. If awarded the Intensity Frontier Fellowship, I will work on two different subjects:

- 1) S1: development of software algorithms for the software-based trigger. I will develop new algorithms to improve the Mu2e online-tracking timing performance to meet the Mu2e requirements. Pivotal for this purpose is the rejection of spurious hits in the tracker that deteriorate the pattern recognition capability. To do so, I will combine all the detector information tracker + calorimeter. This work will also be integrated with a performance study on the Mu2e online framework.
- 2) S2: preparation of the calorimeter laboratory at Fermilab for the assembly. In the second half of 2017 the calorimeter group will start instrumenting the laboratory for the detector construction. I will give a leading contribution in the development of the experimental setup required to perform the assembly, the final test of the final DAQ chain and also a preliminary calibration using Cosmic rays and the laser calibration system.