

Report on 2014 Intensity Frontier Fellowship

I took leave from my Virginia teaching and administrative responsibilities in the fall of 2013 and spring of 2014. The fall semester was spent in residence at the University of Virginia. I was resident at Fermilab from January 2014 until August 2014.

Most of my time spent at Fermilab involved: (1) working on the design and simulating the performance of the Mu2e Cosmic Ray Veto; (2) writing parts of the Mu2e technical design report, including the chapter describing the Cosmic Ray Veto; (3) producing all of the required documents for the Mu2e CD-2 review, including the work breakdown schedule (WBS), the WBS dictionary, the basis of estimates (BOEs), the milestone dictionary, the requirements document, the interface specifications document, and the risk assessment document; (4) participating in various project management training sessions for Mu2e; (5) participating in various Mu2e reviews that lead up to the successful Mu2e CD-2 review last October; (6) completing the installation of the power distribution system for the NO ν A Near Detector; and (7) working with my group at Fermilab to install and commission the NO ν A data-driven trigger system.

The preparations for the Mu2e CD-2 review took more effort than I had banked on. They included a Cosmic Ray Veto design review, the Director's Review, and the Independent Cost Review.

I did not write any physics articles while on leave: the only publication was the aforementioned Mu2e TDR, which will be published on the arXiv. I had hoped to attend a conference or two, but the Mu2e reviews interfered with those plans. I did give colloquia at the Illinois Institute of Technology and Wichita State University.

My residency at Fermilab was crucial in pushing the Mu2e Cosmic Ray Veto forward,

as it enabled me to work daily with the project team, Ron Ray, Doug Glenzinski, Bob Bernstein, and George Ginther, and Fermilab colleagues collaborating with me on the design, in particular Sten Hansen and Paul Rubinov of the Fermilab electronics group, and Julie Whitmore, deputy leader of the Cosmic Ray Veto group and head of the photodetector effort, and the project mechanical engineer, Kurt Krempetz. We would not have been able to make the needed progress had I not had the Fellowship. It also allowed me to work closely with my Virginia research team, most of whom are permanently stationed at Fermilab, on the $\text{NO}\nu\text{A}$ power distribution system, the $\text{NO}\nu\text{A}$ data-driven trigger system, and the various analyses that fall under the aegis of the Exotics group that I co-lead.

Who benefited more from my leave, Fermilab or myself? All I can say is that I found my leave incredibly stimulating and productive, and look forward to the next time I am blessed with such a wonderful opportunity.

E. Craig Dukes,
Professor, Physics