

The LHC is cool, but what comes next?

The LHC experiment is undoubtedly an amazing accomplishment for scientists and non-scientists alike. The publicity that CERN has received due to black hole rumors and the search for the Higgs boson have put accelerator and particle physics in the public spotlight, and almost anyone you ask knows that there is “some really big experiment in Switzerland that might blow up the planet”. But what most people *don't* know is what comes next. Physics doesn't end if or when we find the Higgs, and we need to develop new tools and ways of understanding if we are to continue to probe into the mysteries of the universe. Some of the ideas on the table at the moment are the Neutrino Factory and Muon Collider, and there is now a worldwide effort in research and development for new techniques that can be implemented in order to construct these future accelerators. The international Muon Ionization and Cooling Experiment (MICE) is working to demonstrate one such technique called ionization cooling, which is the first crucial step towards building either a Neutrino Factory or Muon Collider. This poster presents the motivation behind building these accelerators, the theory behind ionization cooling, and how MICE will actually demonstrate it in practice. In addition, the MICE experiment took data over the summer of 2010, and I will show the results of a data quality study that confirms both the stability and purity of the MICE muon beamline.