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Calorimetry Plans for the 4th Concept

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Abstract: The DREAM beam tests revealed that for electromagnetic showers, the energy resolution was limited by photoelectron statistics and the spatial resolution by the 7.2-cm channel size. Both problems are solved by a front-end calorimeter of 2x2x25 cmˆ3 PbWO4 crystals with dual readout of scintillation and Cerenkov light with SiPMs to preserve the excellent hadronic energy resolution. I will discuss bench tests done at TTU, the upcoming CERN test, and our plans for a cubic-meter module that incorporates all of our present ideas: dual-readout crystal calorimeter, triple-readout (scintillation, Cerenkov, MeV-neutrons) fiber calorimeter, including two methods for measuring the neutrons, and a possible slice test of TPC/prototype-dual-triple-muon/prototype in some kind of magnetic field.

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