Enhanced trigger for the NIFFTE fissionTPC in presence of high-rate alpha backgrounds JEREMY BUNDGAARD, Colorado School of Mines, THE NIFFTE COLLABORATION — Nuclear physics and nuclear energy communities call for new, high precision measurements to improve existing fission models and design next generation reactors. The Neutron Induced Fission Fragment Tracking experiment (NIFFTE) has developed the fission Time Projection Chamber (fissionTPC) to measure neutron induced fission with unrivaled precision. The fissionTPC is annually deployed to the Weapons Neutron Research facility at Los Alamos Neutron Science Center where it operates with a neutron beam passing axially through the drift volume, irradiating heavy actinide targets to induce fission. The fissionTPC was developed at the Lawrence Livermore National Laboratory's TPC lab, where it measures spontaneous fission from radioactive sources to characterize detector response, improve performance, and evolve the design. To measure ^{244}Cm, we've developed a fission trigger to reduce the data rate from alpha tracks while maintaining a high fission detection efficiency. In beam, alphas from ^{239}Pu are a large background when detecting fission fragments; implementing the fission trigger will greatly reduce this background. The implementation of the cathode fission trigger in the fissionTPC will be presented along with a detailed study of its efficiency.

Jeremy Bundgaard
Colorado School of Mines

Electronic form version 1.4