Contribution ID: **215** Type: **not specified**

# Studies on particle identification with dE/dx for the ILD TPC

*Wednesday, 24 October 2018 08:30 (30 minutes)*

For the International Large Detector (ILD) at the planned International Linear Collider (ILC) a time projection chamber (TPC) is foreseen as the main tracking detector. To achieve the required point resolution, micro pattern gaseous detectors (MPGD) will be used in the amplification stage. A readout module using a stack of three gas electron multipliers (GEM) for gas amplification was
developed at DESY. In a test campaign at the DESY II Test Beam Facility the performance of three of these modules was investigated. This talk will present results on the system's particle
identification capabilities using the specific energy loss (dE/dx). The results from the prototype were used to extrapolate to the performance of the full ILD TPC, where a dE/dx resolution of better
than 5% could be achieved. In addition, simulation studies were performed to optimize the readout pad size for improved dE/dx separation power. These studies also investigated the possibility to measure the deposited energy by counting the number of ionization clusters (cluster counting). For small enough pads this a pproach was found to give similar or better performance compared to the traditional method of measuring the deposited charge.

**Presenter:** KRAEMER, Uwe (DESY)

**Session Classification:** VTX/TRK 3