Title: **New IceTop Trigger in the context of the planned IceCube Surface Detector Enhancement at the South Pole**

Abstract:
IceTop is the square kilometer surface array for cosmic-ray air showers of the IceCube observatory at the South Pole. IceTop consists of 81 stations, each comprised of a pair of ice-Cherenkov tanks, which over the years loses sensitivity due to snow coverage. This motivated the plan to enhance IceTop by the deployment of elevated scintillation panels and radio antennas. Coincident detection of an air shower with the IceTop tanks and the antennas will increase the measurement accuracy for the cosmic-ray properties. While the radio antennas of the enhancement have a higher sensitivity to inclined showers, the current IceTop trigger, requiring coincident hits of both tanks of a station, loses efficiency for such showers. Therefore, we studied the feasibility of adding a trigger based on the multiplicity of single tank hits and studied its performance with simulations and observed data. In this poster, we present the plans for the surface enhancement and the studies for the new IceTop trigger.