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Calculation of the Askaryan Fraction of the Radio Emission from the Cosmic Ray Air Showers EK NARAYAN PAUDEL, ALAN COLEMAN, FRANK SCHROEDER, Bartol Research Institute, Department of Physics and Astronomy, University of Delaware, ICECUBE COLLABORATION — The mass-dependent energy spectrum of the Ultra-High-Energy cosmic rays is important to understand their source(s), how they are produced and accelerated to such high energy, as well as to understand the hadronic interaction of the particles in the high energy regime. The radio technique can improve the accuracy in the measurement of the mass and the energy of the cosmic rays. The radio emission from the Cosmic ray air shower mainly occurs due to geomagnetic emission and less-dominant Askaryan emission mechanism. The relative fraction of the Askaryan emission varies along the lateral distance from the shower axis but remains steady near the Cherenkov ring. We studied the dependence of the mean value of the Askaryan fraction as a function of various air shower parameters like zenith angle of the shower, distance to the shower maximum, etc. for many CORSIKA/CoREAS simulated air showers. The parametrization of such dependence can provide a handle to estimate cosmic ray mass-sensitive parameters using the experimentally measured value of the Askaryan fraction.

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