Abstract Submitted
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Uncertainties in energy reconstruction of cosmic rays for ANITA III caused by differences in models of radio emission in atmospheric showers[1] VIATCHESLAV BUGAEV, BRIAN RAUCH, Department of Physics and McDonnell Center for the Space Sciences, Washington University in St. Louis, HARM SCHOORLEMMER, University of Hawaii at Manoa, JOE LAM, DAVID URDANETA, STEPHANIE WISSEL, Department of Physics and Astronomy, UCLA, KONSTANTIN BELOV, ANDREW ROMERO-WOLF, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, ANITA COLLABORATION — The third flight of the high-altitude balloon-borne Antarctic Impulsive Transient Antenna (ANITA III) was launched on a high-altitude balloon from McMurdo, Antarctica on December 17th, 2014 and flew for 22 days. It was optimized for the measurement of impulsive radio signals from the charged component of extensive air showers initiated by ultra-high energy cosmic rays in the frequency range $\sim 180 - 1200$ MHz. In addition it is designed to detect radio impulses initiated by high-energy neutrinos interacting in the Antarctic ice, which was the primary objective of the first two ANITA flights. Based on an extensive set of Monte Carlo simulations of radio emissions from cosmic rays (CR) with the ZHAireS and CoREAS simulation packages, we estimate uncertainties in the electric fields at the payload due to different models used in the two packages. The uncertainties in the emission are then propagated through an algorithm for energy reconstruction of individual CR showers to assess uncertainties in the energy reconstruction. We also discuss optimization of this algorithm.

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