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A cut-based search for ultra-high energy neutrinos with the ARA TestBed EUGENE HONG, AMY CONNOLLY, CARL PFENDNER, The Ohio State University, ASKARYAN RADIO ARRAY COLLABORATION — The cosmic ray flux cut off above primary energies of $10^{19.5}$ eV lead us to expect an UHE neutrino flux due to the GZK effect. Askaryan Radio Array (ARA) is an ultra-high energy (UHE) cosmic neutrino detector located at the South Pole that uses the radio Cherenkov technique by deploying radio frequency antennas at a depth of 200m in the Antarctic ice. While there are three complementary ARA neutrino searches in progress, I present the result of the first neutrino search with 2011-2012 ARA TestBed data using a cut-based analysis. For the analysis, I use a Monte Carlo (MC) simulation named AraSim that is calibrated against TestBed calibration pulser data and thermal noise data. We generate custom radio Cherenkov signals in the ice in the time domain for each event with a fully parameterized model. Using timing differences measured at antennas within a single station, we use interferometric techniques to reject thermal noise and continuous wave (CW) backgrounds, and reconstructed directions to search for neutrino candidates in the ice. I will present the UHE neutrino flux constraints from all ARA TestBed analyses.

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