

Abstract Submitted  
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**A neural network based neutrino vertex reconstruction method for the Askaryan Radio Array (ARA)** YUE PAN, Univ of Delaware, ASKARYAN RADIO ARRAY (ARA) COLLABORATION — The Askaryan Radio Array (ARA) is an ultra-high energy (UHE) neutrino ( $E_{\nu} > 10^{17}$  eV) detector at South Pole. ARA aims to utilize radio signals detected from UHE neutrino interactions in glacial ice and infer information about the incident neutrinos. To retrieve this information from experiment data, the first step is to reconstruct the neutrino vertex location. By extracting timing from different antennas, the radiation direction and distance to the vertex can be determined. Together with measured polarization and power at the antennas, these can be used to reconstruct the neutrino direction and energy. I will discuss a solution based on neural networks which can achieve an error within 10 percent.

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