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Horizontally Polarized Antennas Used in the Radio Neutrino Observatory in Greenland[1] KATIE CARTER, California Polytechnic State University, RNO-G COLLABORATION — The Radio Neutrino Observatory in Greenland (RNO-G) is a pathfinder experiment designed to search for the highest energy cosmic neutrinos with energies in excess of 100 PeV. Each autonomous station searches for the radio emission produced by neutrino showers in ice. The design of the deep component of each station includes 9 vertically polarized antennas and 3 horizontally polarized antennas, both of which are required to reconstruct the polarization angle of the radio signal and therefore arrival angle of the neutrino. The deep horizontally polarized antennas for RNO-G will employ a new design, based on ferrite-less cylindrical slot antennas. Using XFDTD, an electromagnetic simulation software, we compare different models based on dual-, tri-, and quad-slot designs in terms of the bandwidth and turn-on frequency of the antenna and their gain. The gain of tri-slot antenna varies by less than 1 dB for frequencies less than 800 MHz and achieves a bandwidth of 200 MHz. For these reasons, the tri-slot has been selected as the antenna to be used in the first five stations of RNO-G to be deployed in summer 2020.

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