



Radio Frequency Low Noise Amplifier for Neutrino Detection in Antarctica

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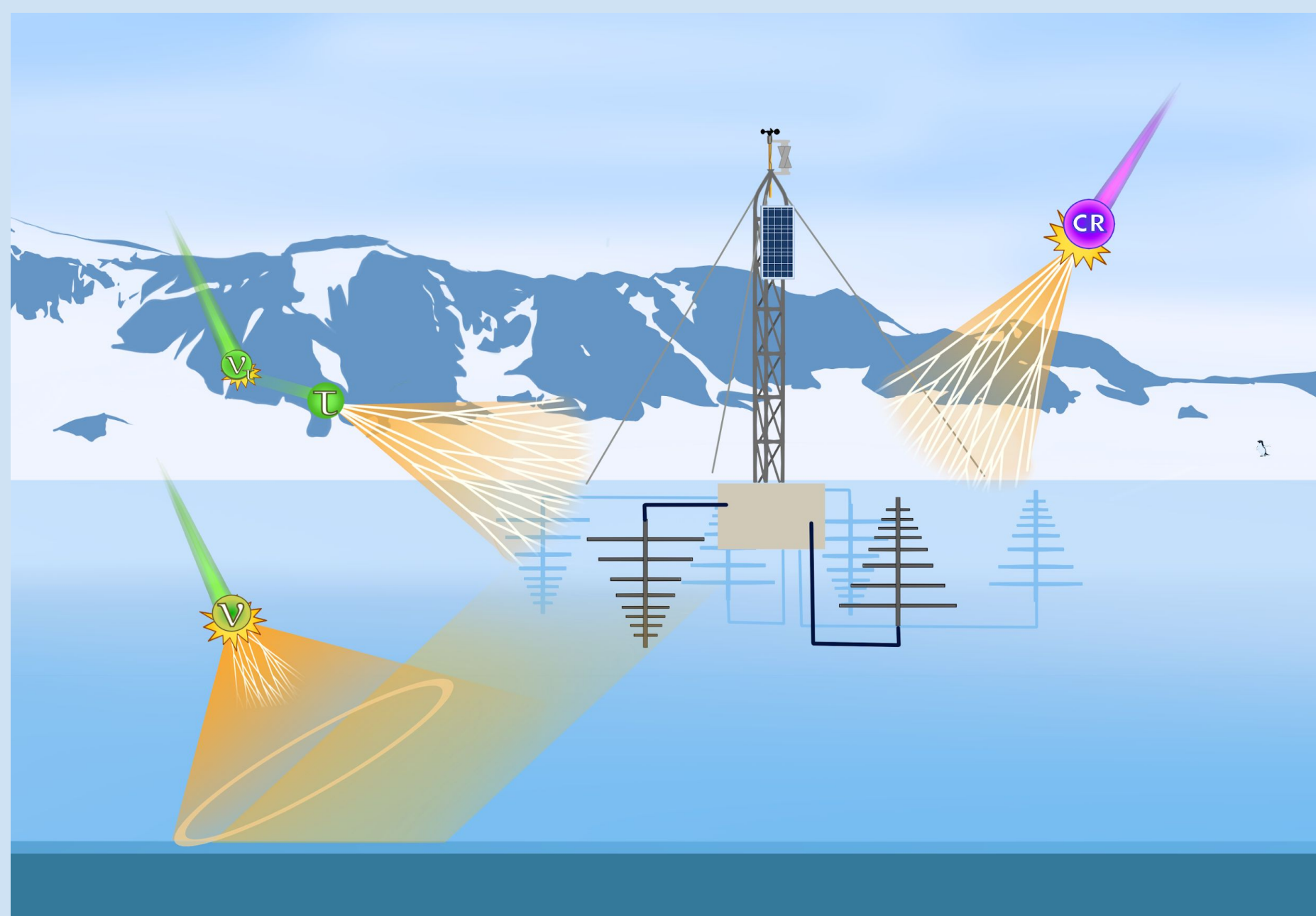
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OBJECTIVE: Design a single stage radio frequency low noise amplifier for the ARIANNA collaboration. The amplifier will be attached to a dipole antenna, powered through a Bias Tee, and lowered into a hole in the ice in Antarctica. It will also improve on gain, bandwidth, noise figure, and power consumption compared to previous amplifiers.

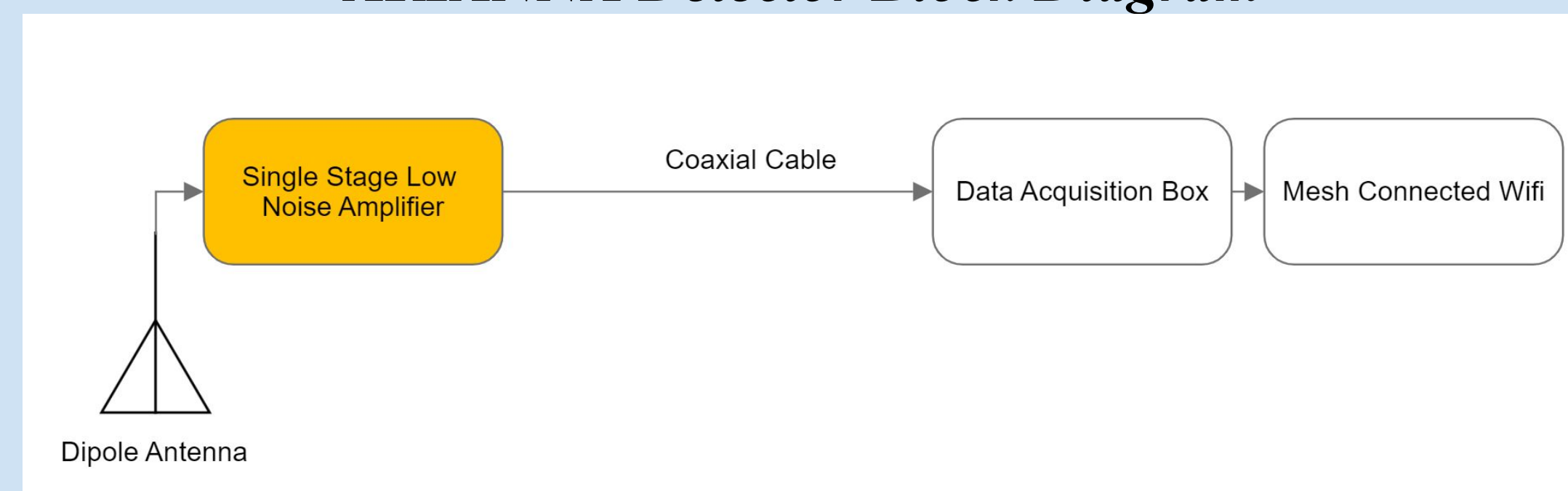
PURPOSE: The *Antarctic Ross Ice-Shelf ANtenna Neutrino Array*, known as ARIANNA, is a Neutrino detector based in Antarctica, and its primary goal is to detect neutrinos with higher energies than ever detected before. The radio frequency signal generated by the interaction between a high energy neutrino and the nucleus of an ice molecule is very weak, and therefore, a low noise amplifier attached to the backend of a dipole antenna would allow the signal strength and characteristic to be preserved as it travels through the coaxial cable.

ARIANNA Detector Concept [1]



DESIGN:

ARIANNA Detector Block Diagram



Single Stage Amplifier Schematic - PMA-5451+

