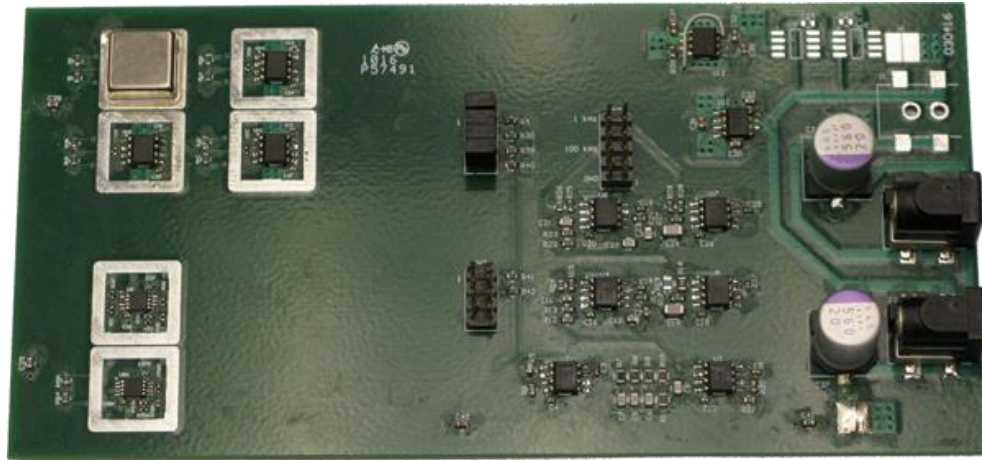


Quantum Vacuum Wave Detector



Prototype Array using Resistors as Antennas (left)

Operational Capabilities

Virtual electromagnetic fields in the Quantum Vacuum (QV) interact with particles and waves in the generation of random numbers. These interactions are used to search for coherent waves in the QV.

- Detection is measured as persistent coherent signals from multiple detectors.
- Signal-to-noise ratio increases with the square-root of the number of channels.
- Can be used in a phased-array for directional detection.

Technical Approach

- The principle of operation is based on interactions of QV wavefunctions with charge carriers or photons in true random number generators (TRNGs).
- Entropy sources may have to be fundamentally quantum mechanical to interact as needed.
- Ambient fields from Terrestrial sources will be a significant unwanted signal source. Signal-to-noise will be a problem.
- These issues will be overcome by using a large number of detectors in a highly-directional array.

Development/Team

- Our team includes principle investigator Scott A. Wilber, serial entrepreneur, 12 issued patents, multiple peer-reviewed papers; and Luis Araujo, Senior Electrical Engineer, programmer.
- Our prototype system indicates a differential frontend can reject enough ambient noise to build a large array of detectors.
- Significant analog and digital signal processing development is required to perform a viable test.
- It is unknown whether coherent QV waves exist. Their detection would be a radical new way of observing the universe.