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Construction of a Magnetic Induction Antenna to Detect Schumann Resonances TREVR FERNALD, ALEXIS BOWERS, RAQUEL COSSEL, MAXWELL MCINTYRE, DR. JOHN REID, Lock Haven University — An antenna was designed and built to detect magnetic field changes in the form of Schumann resonances. This was done in hopes of eventually being able to correlate data with sprite occurrence. A square loop was constructed with one meter sides using 2x4s and was wrapped with six hundred turns of 0.2mm thick copper wire. The antenna was tested in a rural location in northern Pennsylvania, chosen for its isolation and expectations of low electrical noise. Detected signals were filtered using a band-pass filter and observed using an oscilloscope. The signal had too much interference to make it possible to see any unmistakably Schumann character, but a Fourier Transform function made it possible to see the contribution of each component frequency to the overall interference. This function revealed possible presence of Schumann character in the signal, indicating mostly 2nd and 3rd mode Schumann frequencies. The fundamental mode may have been observed as well, but was less consistent and pronounced than the other frequencies. The performance of the filter was somewhat questionable and electrical noise was evident, so further experimentation is necessary.

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