

Abstract Submitted  
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**The High Fidelity Plasma Speaker**<sup>1</sup> JAMES MCGALL, Salisbury University — A plasma speaker is a device that uses ionized gas as the driving source of sound production, rather than the traditional magnetic coil and membrane setup found on a standard speaker. Similar to how lightning produces sound, or even a small static shock, a plasma speaker uses a modulating electric arc between two electrodes to produce sound. An electric circuit is built that allows the variance of the high voltage electric potential to be controlled by a 3.5mm standard audio headphone jack, allowing sound energy to be transferred from the plasma to the air by means of pulse width modulation. For my summer project I have built two different models of plasma speakers and am working on a third. The speaker benefits from having a nearly massless driver, and I hypothesize that it should show a response rate faster than that of a traditional speaker and a decreased impulse response while having the drawbacks of inefficiency and a low maximum decibel output. The speakers are currently being optimized with magnetic stabilization of the plasma and will be tested soon for impulse response, frequency generation, efficiency, and audio coloration.

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