Optimization of a Small Scale Linear Reluctance Accelerator
THOR BARRERA[1], ROBBY BEARD[2], Sacramento State University — Reluctance accelerators are extremely promising future methods of transportation. Several problems still plague these devices, most prominently low efficiency. Variables to overcoming efficiency problems are many and difficult to correlate how they affect our accelerator. The study examined several differing variables that present potential challenges in optimizing the efficiency of reluctance accelerators. These include coil and projectile design, power supplies, switching, and the elusive gradient inductance problem. Extensive research in these areas has been performed from computational and theoretical to experimental. Findings show that these parameters share significant similarity to transformer design elements, thus general findings show current optimized parameters the research suggests as a baseline for further research and design. Demonstration of these current findings will be offered at the time of presentation.

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