Abstract Submitted
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Crossed Flux Tube Experiment (CroFT)[1] MAGNUS HAW, PAUL BELLAN, Caltech — Magnetic flux tubes are a fundamental feature of solar coronal loops and astrophysical jets, as well as fusion devices, such as tokamaks and spheromaks. These flux tubes are subject to magnetohydrodynamic forces, expanding, undergoing kink instabilities, and magnetically reconnecting. The CroFT experiment arranges for two flux tubes to cross over each other in a variety of geometries (rotating candelabra) with separate control/power supplies for each flux tube. The experiment aims to study the dynamics and interaction of these arched, plasma-filled flux tubes, specifically the magnetic reconnection that occurs at the crossover point and how this is affected by loop geometry. Initial observations indicate these flux tubes magnetically reconnect with each other as predicted: two equally sized loops reconnect to form a small loop and a large loop if the currents and magnetic fields of both tubes are parallel. If the flux tubes are formed adjacent, rather than crossing over each other, they do not merge. It has also been observed that flux tubes of different species generate protrusions/jets not seen in single-species pairs. Additional non-optical diagnostics (voltage, current) are still being built.

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