Abstract Submitted
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**Characterization of plasma-filled flux tubes and other open flux systems**[1] EVE STENSON, PAUL BELLAN, Caltech — The Caltech "solar" gun not only accesses the physical regime found in the solar corona, but also provides a powerful experimental platform for studying fundamental forces in dynamic open flux plasma structures. The magnetized plasma gun comprises two semicircular electrodes in front of four electromagnetic coils. Each coil can be independently reversed or disconnected, making a host of different magnetic configurations available. Among these are single plasma loops and pairs of adjacent loops that can have the same or opposite helicities. B-dot probes are used to take time-resolved measurements of the plasma magnetic field. Different neutral gases can be supplied to the gun, with the option of using one or two species per plasma. Using two species makes it possible to image different sections of the plasma with optical filters. When making two loops, each loop can be formed from a different gas and hence imaged separately. In a single loop, the dual gas technique is used to measure the speed of plasma flowing into the magnetic flux tube from each end. Flow speeds are found to be directly proportional to the azimuthal magnetic field generated by current flowing along the loop and inversely proportional to the plasma mass density.

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