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Construction of and experiments with a compact plasma source

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Experiments requiring the use of plasma sources often have trouble getting time on large plasma sources to perform their experiments despite needing only a few centimeters of high density plasma. It is significantly more convenient to have a short, high density plasma source that is available on demand for immediate experimentation. A capillary discharge plasma source was built at UCLA for this exact reason and is due to enter experimental service soon. Using argon gas and a spontaneous breakdown approach to plasma formation, this capillary is capable of generating plasmas up to 10^{14} cm^{-3} with a repetition rate of about 10 seconds without requiring excessive laboratory space. This compact plasma source will be used in experiments involving the SAMURAI and AWA facilities, whose results will be evaluated against the MHD code FLASH. This paper will discuss the theory behind and construction of a capillary discharge plasma source and interferometric diagnostic system, and present experimental results that utilized this plasma source.

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Footnotes

I have read and accept the Privacy Policy Statement

Yes

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