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Nonlinear Transmission Line for RF Plasma Heating

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Eagle Harbor Technologies, Inc. (EHT) is developing a low-cost, fully solid-state architecture for the pulsed RF heating systems and diagnostics at fusion science experiments. EHT has constructed and tested a high voltage inductive adder to drive gyromagnetic and diode-based nonlinear transmission lines (NLTLs). The inductive adder is capable of 35 kV output with a 10-ns rise-time into 50 Ohm loads. During this program EHT has experimented with the development of diode-based lines as a method to produce high power pulsed RF at frequencies from 0.1 to 3 GHz. Here the concept is to utilize the system to demonstrate pulsed plasma heating with an inductive adder high power RF source. EHT will present results of a new diode based NLTL and show the design of the experimental setup for plasma heating.

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