

Abstract Submitted
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Pattern formation and filamentation in low temperature, magnetized plasmas a numerical approach¹ MOHAMAD MENATI, UWE KONOPKA, EDWARD THOMAS, Auburn Univ., Physics Dep., Auburn, Al — In low-temperature discharges under the influence of high magnetic field, pattern and filament formation in the plasma has been reported by different groups. The phenomena present themselves as bright plasma columns (filaments) oriented parallel to the magnetic field lines at high magnetic field regime. The plasma structure can filament into different shapes from single columns to spiral and bright rings when viewed from the top. In spite of the extensive experimental observations, the observed effects lack a detailed theoretical and numerical description. In an attempt to numerically explain the plasma filamentation, we present a simplified model for the plasma discharge and power deposition into the plasma. Based on the model, 2-D and 3-D codes are being developed that solve Poissons equation along with the fluid equations to obtain a self-consistent description of the plasma. The model and preliminary results applied to the specific plasma conditions will be presented.

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