

Abstract Submitted
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Ferroelectric Plasma Source for Heavy Ion Beam Charge Neutralization¹ P.C. EFTHIMION, E.P. GILSON, L. GRISHAM, R.C. DAVIDSON, Princeton Plasma Physics Laboratory, P. SEIDL, W. WALDRON, S. YU, B.G. LOGAN, Lawrence Berkeley National Laboratory — Plasmas are a source of electrons for charge neutralizing intense heavy ion beams to allow them to focus to a small spot size and compress their pulse length. To produce one-meter-long plasma, sources based upon ferroelectric ceramic (BaTiO_3) with large dielectric coefficients are being developed. The drift tube inner surface of the Neutralized Drift Compression Experiment (NDCX) is covered with ceramic, and ~ 7 kV is applied between the drift tube and the front surface of the ceramic. A prototype 20 cm ferroelectric source was characterized, integrated into the Neutralized Transport Experiment (NTX), and successfully charge neutralized a K^+ ion beam. A one-meter-long source comprised of five 20-cm-long sources has been built and tested. Two capacitor banks and networks provide power to two groups of plasma sources. Resistors were added to sources to optimize the applied voltages to achieve a uniform density of mid 10^{10} cm^{-3} . Preliminary data from pulse compression experiments will be presented.

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