

Plasma compression experiments at General Fusion

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Abstract

General Fusion is developing an acoustically driven magnetized target fusion system. I will first describe the general idea and the parameters space where GF would like to operate. In order to test the compression of plasma without having to build an expensive compression machine, we are presently using high explosive to compress the plasma on a time scale similar to our planned acoustic driver. We have compressed spheromak and spherical tokamak. We initially lost the plasma by radiation due to impurity injection during the compression process. Shock less compression of the liner and switching from titanium gettering to lithium gettering fixed that problem. We now observe the rapid growth of MHD modes during the compression that terminates the plasma at low compression ratio ($\sim 2x$ radial). Our latest simulations indicate that a change of shape to a more self similar spherical implosion should improve the stability of the imploding plasma. We now have such SPECTOR plasma in operation achieving good results, and plan to compress it in the near future.