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Overview of the FuZE Fusion Z-Pinch Experiment[1] U. SHUMLAK, B.A. NELSON, E.L. CLAVEAU, E.G. FORBES, R.P. GOLINGO, A.D. STEPANOV, T.R. WEBER, Y. ZHANG, University of Washington, H.S. MCLEAN, D.P. HIGGINSON, A. SCHMIDT, K.K. TUMMEL, Lawrence Livermore National Lab — Successful results of the sheared flow stabilized (SFS) Z-pinch from ZaP and ZaP-HD have motivated the new FuZE project to scale the plasma performance to fusion conditions. The SFS Z-pinch is immune to the instabilities that plague the conventional Z-pinch yet maintains the same favorable radial scaling. The plasma density and temperature increase rapidly with decreasing plasma radius, which naturally leads to a compact configuration at fusion conditions. The SFS Z-pinch is being investigated as a novel approach to a compact fusion device in a collaborative ARPA-E ALPHA project with the University of Washington and Lawrence Livermore National Laboratory. The project includes an experimental effort coupled with high-fidelity physics modeling using kinetic and fluid simulations. Along with scaling law analysis, computational and experimental results from the FuZE device are presented.

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