Abstract Submitted
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**Magnetized Plasma Compression for Fusion Energy**[1] JAMES DEGNAN, CHRISTOPHER GRABOWSKI, MATTHEW DOMONKOS, DAVID AMDAHL, Air Force Research Laboratory, Directed Energy Directorate, Kirtland AFB, NM 87117, USA — Magnetized Plasma Compression (MPC) uses magnetic inhibition of thermal conduction and enhancement of charge particle product capture to greatly reduce the temporal and spatial compression required relative to un-magnetized inertial fusion (IFE) - to microseconds, centimeters vs nanoseconds, sub-millimeter. MPC greatly reduces the required confinement time relative to MFE - to microseconds vs minutes. Proof of principle can be demonstrated or refuted using high current pulsed power driven compression of magnetized plasmas using magnetic pressure driven implosions of metal shells, known as imploding liners. This can be done at a cost of a few tens of millions of dollars. If demonstrated, it becomes worthwhile to develop repetitive implosion drivers. One approach is to use arrays of heavy ion beams for energy production, though with much less temporal and spatial compression than that envisioned for un-magnetized IFE, with larger compression targets, and with much less ambitious compression ratios. A less expensive, repetitive pulsed power driver, if feasible, would require engineering development for transient, rapidly replaceable transmission lines such as envisioned by Sandia National Laboratories.

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