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Concept to Employ Magnetohydrodynamic (MHD) Conversion in a 2 GW Direct Drive Inertial Fusion Energy (IFE) Power Reactor BRETT ANDERSON, St. Olaf College, ALISON BURSTEIN, Wesleyan University, CHARLES GENTILE, Princeton Plasma Physics Laboratory — The conceptual design of a 2 GW direct drive IFE power reactor may provide an opportunity to directly harness the power in the post detonation ion fields. Conceptually, this can be accomplished by utilizing a magnetic cusp field to guide the ions into equatorial and polar ion dumps. The ion fields resulting from this magnetic intervention configuration pose a distinct challenge, as their intensity may have the potential to damage the ion dumps. One method of addressing this challenge is by employing MHD conversion to transform the internal energy of the fields directly into electrical energy, a process which would also reduce the fields' strength. In order to analyze the potential of MHD conversion in IFE, results of previous work in other applications are examined in the context of this project. Preliminary assessment reveals that MHD conversion is a promising solution to this issue, although a number of engineering and practical concerns will need to be addressed. This paper concentrates on the primary issues associated with MHD conversion. *Support for this research was provided by the U.S. Department of Energy's Science Undergraduate Laboratory Internship (SULI) Program.*

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