

Abstract Submitted  
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**Heat capacity of spinning plasma**<sup>1</sup> V.I. GEYKO, N.J. FISCH, Princeton University — Equilibrium thermodynamics properties, such as heat capacity and adiabatic axial and radial compressibility of a rotating plasma column are studied. These properties depend on rotation speed, charge density, external magnetic field strength and electron-ion mass ratio. Plasma rotation serves as an additional energy storage, hence, yields to increased heat capacity. It also leads to charge separation that changes plasma density distribution due to electrostatic interaction and Lorentz force and therefore modifies thermodynamic properties. The obtained results can provide limits and optimal regimes for radial compression of z-pinch type structures and optimize energy deposition profile.

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