Hot spot model of MagLIF implosions: Nernst term effect on magnetic flux losses.[1] FERNANDO GARCIA RUBIO, JAVIER SANZ RECIO, ETSI Aeronauticos, Universidad Politecnica de Madrid, RICCARDO BETTI, Laboratory for Laser Energetics and Department of Mechanical Engineering and Physics and Astronomy, University of Rochester — An analytical model of a collisional plasma being compressed by a cylindrical liner is proposed and solved in a magnetized liner inertial fusion-like context. The implosion is assumed to be isobaric, and the magnetic diffusion is confined to a thin layer near the liner. Both unmagnetized and magnetized plasma cases are considered. The model reduces to a system of two partial differential equations for temperature and magnetic field. Special attention is given to the effect of the Nernst term on the evolution of the magnetic field. Scaling laws for temperature, magnetic field, hot spot mass increase and magnetic field losses are obtained. The temperature and magnetic field spatial profiles tend to a self-similar state. It is found that when the Nernst term is taken into account, the magnetic field is advected towards the liner, and the magnetic flux losses are independent of the magnetic Lewis number.

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