Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

Magneto-thermal Reconnection Processes and Tridimensional Ignition[1] D. GRASSO, CNR (Italy), B. COPPI, MIT, R. GATTO, Uniroma1 (Italy) — A new kind of magnetic reconnection process that is associated with the presence of finite electron temperature [1] gradients on rational magnetic surfaces of an axisymmetric confinement configuration, is presented. This is relevant to regimes where the electron thermal conductivity is relatively large and the reconnection layer is smaller than the "thermal" layer where the transverse thermal conductivity plays a key role. When referring to fusion burning plasmas the excitation of the considered modes is associated with the nuclear heating of the electron population. This "thermonuclear instability" [2] can then develop more easily around closed magnetic field lines, than on non-rational magnetic surfaces.
[1] B. Coppi, B. Basu and A. Fletcher, Nucl. Fus., 57, 7 (2017).
[2] B. Coppi and the Ignitor Program Members, Nucl. Fus., 55, 053011 (2015).

[1]Sponsored in part by the U.S. Department of Energy and by C.N.R of Italy.

Bruno Coppi
Massachusetts Institute of Technology

Date submitted: 28 Jun 2019 Electronic form version 1.4