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Tridimensional Burning Structures Associated with Anisotropic Thermal Conductivities in Magnetically Confined and Pulsar Plasmas[1]

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— A surprising result of the most recent theory [1] of the thermonuclear instability, which can take place in D-T plasmas close to ignition, is that it can develop with tridimensional structures emerging from an axisymmetric toroidal confinement configurations. These structures are helical filaments ("snakes") that are localized radially around a given rational magnetic surface [2]. Until now well known analyses of fusion burning processes in magnetically confined plasmas, that include the thermonuclear instability, have been carried out by 1+1/2 D transport codes [3] and, consequently, the onset of tri-dimensional structures has not been investigated. The importance of the electron thermal conductivities anisotropy is pointed out also for the inhomogeneous thermonuclear burning of plasmas on the surface of pulsars and for the formation of the observed bright spots on some of them.

[1] COPPI B., Presentation at the Sherwood Theory Meeting, San Diego, CA, April 2014.
[2] COPPI B., *et al.*, *Nucl. Fus.* **55**, (2015) 053011.
[3] AIROLDI, A., CENACCHI G., *Nucl. Fus.* **37**, (1997) 1117.

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