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Session GO09: Fundamental: Magnetic Reconnection

9:30 AM–12:30 PM, Tuesday, November 9, 2021

Room: Room 406

Chair: Jack Hare, MIT PSFC

Abstract: GO09.00011 : Thermal Energy Density Driven Magnetic Reconnection

11:30 AM–11:42 AM

[← Abstract →](#)

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Magnetic reconnection is usually associated with conversion of magnetic energy into particle acceleration or thermal energy. However, a specific reconnection process driven by plasma pressure gradients was identified in Ref.[1] with a consistent theory of (non-ideal) MHD $m^0=1$ modes in well confined plasmas. This process, based on an Ohm's law contribution to the electron balance equations, remains the basis for the explanation of the observed sawtooth oscillations of the central plasma pressure and for the inferred magnetic field structures due to fishbone oscillations associated with injected high energy particle populations. A novel process [2] expected to have a wide range of applications concerns magnetic reconnection sustained by a significant gradient of the longitudinal electron temperature and based on the electron thermal energy balance equation rather than on an Ohm's law.