Plasma relaxation and topological aspects in Hall magnetohydrodynamics BHIMSEN SHIVAMOGGI, University of Central Florida — Parker's formulation of isotopological plasma relaxation process in magnetohydrodynamics (MHD) is extended to Hall MHD (Shivamoggi [1]). The torsion coefficient al in the Hall MHD Beltrami condition turns out now to be proportional to the *potential vorticity*. The Hall MHD Beltrami condition becomes equivalent to the *potential vorticity* conservation equation in two-dimensional (2D) hydrodynamics if the Hall MHD Lagrange multiplier β is taken to be proportional to the *potential vorticity* as well. The winding pattern of the magnetic field lines in Hall MHD then appears to evolve in the same way as *potential vorticity* lines in 2D hydrodynamics.

[1] Shivamoggi, B. K.: *Phys. Plasmas* **19**, 072124, (2012).

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