

ILL-POSEDNESS OF THE HALL-MHD SYSTEM WITHOUT MAGNETIC RESISTIVITY

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ABSTRACT

We show that the incompressible Hall-MHD system without magnetic resistivity is ill-posed in the strongest sense of Hadamard. To obtain this nonlinear result, we first consider the linearization around a special class of stationary magnetic fields and show that this linear equation is ill-posed. The proof is based on construction of certain "degenerating" approximate solutions and application of a generalized version of the energy identity. This is joint work with Sung-Jin Oh ([1]).

REFERENCES

1. Jeong, In-Jee and Oh, Sung-Jin "On the Cauchy problem for the Hall and electron magnetohydrodynamic equations without resistivity I: illposedness near degenerate stationary solutions", arxiv.org/abs/1902.02025.