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

In-Jee JEONG¹ and Sung-Jin OH²

¹) School of Mathematics, KIAS, Seoul 02455, KOREA
²) Department of Mathematics, UC Berkeley, USA

Corresponding Author: In-Jee JEONG, ijeong@kias.re.kr

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