Boundary value problems in magnetohydrodynamics: old and new results

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Abstract: Magnetohydrodynamics plays a crucial role in understanding the behavior of plasmas, electromagnetic fields, and fluid dynamics, providing a fundamental framework for studying phenomena in astrophysics, fusion energy, and space exploration. In this talk, we will present a short survey about the well-posedness of boundary value problems for steady ideal magnetic fluids. More precisely, we will first focus on the magneto-hydrostatic equations (in two and three dimensions) and conclude with some ongoing work related to the steady magneto-hydrodnamic equations.

References: