

Karlstad Applied Analysis Seminar (2024)

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A multi-physics system for magneto-rheological suspensions

Abstract

We propose a model for particulate flow of rigid particles in a viscous fluid under the influence of a moderate magnetic field. The model effectively couples Stokes equation with the quasi-static Maxwell's equations through the Lorentz force and the Maxwell stress tensor. I will discuss certain aspects dealing with the augmented variational formulation of Maxwell's equations as well as existence of weak solutions using the Altman-Shinbrot fixed point theorem for small magnetic Reynolds number.