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Strong solutions for the nonhomogeneous MHD equations in thin domains

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Abstract

We consider the nonhomogeneous incompressible Magnetohydrodynamic equations in a thin domain $\Omega := \mathbb{R}^2 \times (0, \epsilon)$, with. $\epsilon \in (0, 1]$, and show the global existence of strong solutions. In addition, we prove that, as $\epsilon \to 0^+$, the velocity and magnetic field tends to vanish away from the initial time.

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