



Some qualitative properties of the solutions of the Magnetohydrodynamic equations for nonlinear bipolar fluids

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In this article we study the long-time behaviour of a system of nonlinear Partial Differential Equations (PDEs) modelling the motion of incompressible, isothermal and conducting modified bipolar fluids in presence of magnetic field. We mainly prove the existence of a global attractor denoted by \mathcal{A} for the nonlinear semigroup associated to the aforementioned systems of nonlinear PDEs. We also show that this nonlinear semigroup is uniformly differentiable on \mathcal{A} . This fact enables us to go further and prove that the attractor \mathcal{A} is of finite-dimensional and we give an explicit bounds for its Hausdorff and fractal dimensions.

Subjects: **Analysis of PDEs (math.AP)**; Dynamical Systems (math.DS)

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