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	authors	<ul style="list-style-type: none">Dongho Chae	authors	<ul style="list-style-type: none">Dongho Chae	NOT DUPLICATES	1303
	title	Nonexistence of self-similar singularities in the ideal magnetohydrodynamics	title	Nonexistence of self-similar singularities in the viscous magnetohydrodynamics with zero resistivity		
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	urls	<ul style="list-style-type: none">http://arxiv.org/pdf/math/0703317v3http://arxiv.org/abs/math/0703317v3http://arxiv.org/pdf/math/0703317v3	urls	<ul style="list-style-type: none">https://archive.org/download/arxiv-math0703830/math0703830.pdf		
	id	id2277394725180752857	id	id2509605109875164650		
	abstract	In this paper we exclude the scenario of apparition of finite time singularity in the form of self-similar singularities in the ideal magnetohydrodynamic equations, assuming suitable integrability conditions on the vorticity and the magnetic field. We also consider more sophisticated possibility of asymptotically self-similar singularities, which means that the local classical solution converges to the self-similar profile as we approaches to the possible time of singularity. The scenario of asymptotically self-similar singularity is also excluded under suitable conditions on the profile. In the 2D magnetohydrodynamics the magnetic field evolution equations reduce to a divergence free transport equation for a scalar stream function. This helps us to improve the above nonexistence theorems on the self-similar singularities, in the sense that we only need weaker integrability conditions on the profile to prove the results.	abstract	We are concerned on the possibility of finite time singularity in a partially viscous magnetohydrodynamic equations in R^n , $n=2,3$, namely the MHD with positive viscosity and zero resistivity. In the special case of zero magnetic field the system reduces to the Navier-Stokes equations in R^n . In this paper we exclude the scenario of finite time singularity in the form of self-similarity, under suitable integrability conditions on the velocity and the magnetic field. We also prove the nonexistence of asymptotically self-similar singularity. This provides us information on the behavior of solutions near possible singularity of general type as described in Corollary 1.1 below.		
	versions		versions			