cases	doc_1	doc_2	decision	id
			NOT DUPLICATES	1179

doc_1

authors	• John A. Adam
title	A nonlinear eigenvalue problem in astrophysical magnetohydrodynamics: Some properties of the spectrum
publication_date	1989-03-01 00:00:00
source	SupportedSources.OPENALEX
journal	Journal of Mathematical Physics
volume	
doi	10.1063/1.528392
urls	• https://openalex.org/W2046262924 • https://doi.org/10.1063/1.528392 • https://digitalcommons.odu.edu/cgi/viewcontent.cgi?article=1153&context=mathstat_fac_pubs
id	id8680548999588315659
abstract	
versions	

doc_2

authors	• Adam, John A.
title	A Nonlinear Eigenvalue Problem in Astrophysical Magnetohydrodynamics: Some Properties of the Spectrum
publication_date	1989-01-01 00:00:00
source	SupportedSources.CORE
journal	
volume	
doi	None
urls	• https://core.ac.uk/download/217299455.pdf
id	id-5345294098406050429
abstract	The equations of ideal magnetohydrodynamics (MHD) with an external gravitational potentialâ€”a â€˜â€˜magnetoatmosphereâ€™â€™â€”are examined in detail as a singular nonlinear eigenvalue problem. Properties of the spectrum are discussed with specific emphasis on two systems relevant to solar magnetohydrodynamics. In the absence of a gravitational potential, the system reduces to that of importance in MHD and plasma physics, albeit in a different geometry. This further reduces to a form isomorphic to that derived in the study of plasma oscillations in a cold plasma, AlfvÃ©n wave propagation in an inhomogeneous medium, and MHD waves in a sheet pinch. In cylindrical geometry, the relevant model equations are those for a diffuse linear pinch. The full system, including gravity, has been applied to the study of flareâ€induced coronal waves, running penumbral waves in sunspots, and linear wave coupling in a highly inhomogeneous medium. The structure of the soâ€called MHD critical layer and its contribution to the continuous spectrum is examined in detail for a model magnetoatmosphere, based on properties of the hypergeometric differential operator. The relationship of this singular region to critical layers in classical linear hydrodynamic stability theory is also discussed in the light of a specific model (in the Appendix)
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