



Sudan University of Science and Technology



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Determining Field Line Resonance Frequency Recorded at Low Latitude during Onset of Global Magnetohydrodynamic Wave

تحديد تردد رنين خطوط المجال المغناطيسي اثناء حدوث موجات هيدروديناميكية
مرصوده عند خطوط العرض المنخفض

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Prepared by: Magzoob Hassan Naser Abobakr

Supervised by: Dr. Magdi Elfadil Yousif Suliman

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الآيه

قال الله عز وجل: ﴿أَلَمْ تَرَ أَنَّ اللَّهَ أَنْزَلَ مِنَ السَّمَاءِ مَاءً فَأَخْرَجْنَا بِهِ ثَمَرَاتٍ مُخْتَلِفًا
أَلْوَانُهَا وَمِنَ الْجِبَالِ جُدَدٌ بَيضٌ وَحُمْرٌ مُخْتَلِفٌ أَلْوَانُهَا وَغَرَابِيبُ سُودٌ ﴿٢٧﴾

فاطر الايه 27

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ABSTRACT

In this research, characteristics of magnetospheric hydrodynamic pulsations and their effect on the field line resonance (FLR) phenomenon were discussed, whence it was stated that the FLR is generated when the frequency of hydromagnetic waves in Earth's magnetosphere matches the eigenfrequency of the field line. Data from a ground magnetometer station (HERMANUS), at low latitude and belongs to the Magnetic Data Acquisition System (MAGDAS) project of Kyushu University, Japan, have been used to estimate the FLR.

Power spectrum of both magnetic components H and D were calculated from data of the station with magnetic coordinates (GM Lat: -42.29, GM Long: 82.20).

Single station (H\D) technique was used to estimate an eigenfrequency of the FLR and it was found to be: 2.5 *mHz*.

مستخلص البحث

تمت دراسة نبضات الموجات الهايدروديناميكية الماغنتوسفيريه وتأثيرها علي خطوط المجال المغناطيسي للارض حيث تكون رنين خط المجال في الغلاف المغناطيسي (ماغنتوسفير) الارض عند ملامسة تردد الموجات الهايدروديناميكية الماغنتوسفيريه للتردد الفعلي لخط المجال. تم استخدام بيانات المحطه الارضيه (هيرمانس)، في مناطق ذات خط العرض المنخفض (GM Lat:) 82.2. -42.29, والتي تنتمي لمشروع نظام احتياز البيانات المغناطيسية (MAGDAS) والذي ينتمي لجامعة كيوشو اليابانية. تمت ملاحظة وقياس شدة الطيف لمركبات المجال المغناطيسي H و D، حيث استخدمت تقنية (المحطة الواحده) لتحديد واستقراء تردد رنين خط المجال. حيث وجد ان تردد خط الرنين يساوي 2.5 ملي هيرز.

TABLE OF CONTENTS

Contents	Page
الايه	II
Acknowledgment	III
Abstract	IV

مستخلص البحث	V
Table of contents	VI

Chapter I

Number	Contents	Page
1.1.	Introduction	1
1.2.	Objectives of the research	2
1.3.	Research Methodology	2
1.4.	Statement of The Research Problem	2
1.5.	Outline of the research	2

Chapter II

2.1.	Definition of a Plasma	4
2.2.	Solar wind plasma	5
2.2.1.	Electrons	5
2.2.2.	Ions	6
2.3.	Geophysical plasma	7
2.4.	Magnetosphere	7
2.5.	Ionosphere	8
2.6.	Magnetohydrodynamic waves	9
2.7.	Alfven Wave	10
2.8.	Geomagnetic field	10
2.9.	Previous Studies	14

Chapter III

3.1.	Field line resonance	15
3.2.	Techniques for detecting FLR	17

3.2.1.	Variation in Spectral Power with Latitude	17
3.2.2.	Variation of Phase with Latitude	18
3.2.3.	Spectral Power Difference and Division	18
3.3.	Single station(H\D)	19

Chapter IV

4.1.	Results	20
4.2.	Discussion	22
4.3.	Conclusion	22
4.4.	Recommendation	22
	References	23

List of figures

S.NO	Figure	Page no
Fig.2.1	Plasma population in Earth's magnetosphere	8
Fig2.2	Components of the geomagnetic field	12
Fig.3.1	The field lines of a dipole (middle panels) may be approximated as stretched strings panels. The dipole lines may be displaced and oscillate in two orthogonal directions – radial (center panels) and azimuthal (right panels).	16
Fig4.1	H component of HERMINAS station	20
Fig4.2	D component of HERMINAS station	21
Fig4.3	H\D of HERMINAS station	21

Appendices

appendix		Page no
----------	--	---------

A	MATLAB code to plot power spectrum (D) and(H) OF HER-	24
B	MATLAB code to plot power spectrum (H/ D) of HER-	28
C	Text file sample of data	29