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## 基于MF雷达观测的D区日食效应的研究

李娜, 陈金松, 赵蕾, 赵振维\*

中国电波传播研究所, 青岛 266107 电波环境特性及模化技术重点实验室, 青岛 266107

The study of eclipse effects in D region based on MF radar measurement

LI Na, CHEN Jin-Song, ZHAO Lei, ZHAO Zhen-Wei\*

China Research Institute of Radio Wave Propagation, Qingdao 266107, China National Key Laboratory of Electron Magnetic Environment, Qingdao 266107, China

摘要

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**摘要** 本文利用昆明站(25.6° N, 103.8° E) MF雷达在2009年7月22日的观测数据, 研究了这次日食期间D区电子密度的变化. 结果表明, 随着日食的开始, D区电子密度逐渐减小, 在食甚后, 电子密度开始恢复. 但观测发现电子密度不与日食同步, 而是存在一个大约9 min的时延. 利用日食期间的观测数据, 尝试建立了两个简单的模型来估算D区的有效复合系数, 模型结果与以往的理论研究和观测保持了较好的一致性, 其中模型二较模型一更适用于D区有效复合系数的计算.

**关键词:** MF雷达 日食 电子密度 有效复合系数 D区

**Abstract:** In this study, on the basis of the data on 22 July, 2009 derived from MF radar at Kunming station (25.6° N, 103.8° E), we investigated the response of electron density in the D region to the solar eclipse. Simulated results show that the electron density of D region gradually decreases as the solar eclipse begins and increases slowly after the mid eclipse. However, the change in electron density is not in accord with the solar eclipse processes, and there is an about 9-minute time delay from the moment of mid eclipse to the moment of minimum electron density. An attempt to establish two simple models is proposed to estimate the effective recombination coefficients of D region using the data during the solar eclipse. The model results retain good correspondence with previous theoretical investigations and measurements, and the second model is a better way to calculate the effective recombination coefficients of D region than the first model.

**Keywords:** MF radar Eclipse Electron density Effective recombination coefficient D region

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About author: 李娜, 女, 1981年生, 硕士, 主要从事中高层大气探测方面的研究工作. E-mail: lina861@sina.com

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