

Fine structure in ionospheric/magnetospheric Alfvén resonator spectra at low latitudes

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We consider formation of fine spectral resonance structure (FSRS) of the ULF electromagnetic background noise in a combined system formed by the ionospheric and magnetospheric Alfvén resonators (IAR and MAR). Following Ovchinnikov (1999), we call this system the ionospheric/magnetospheric resonator (IMAR). Such a resonator can be efficiently excited at low latitudes where the IAR and MAR eigenfrequencies become sufficiently close to each other. Observations of low-latitude ULF magnetic noise at Crete station ($L = 1.43$) show FSRS examples with frequency scales 2 to 5 times smaller than the characteristic IAR frequency. Specific for this fine structure is its much higher quality factor ($Q \sim 10$ to 20) as compared with field-line resonance observations. We show that FSRS frequency scales can be explained on the basis of the IMAR scenario.