

Interpretation of zebra-pattern in kilometric radiation from Jupiter

E. Ya. Zlotnik, V. Shaposhnikov, and V. Zaitsev
Institute of Applied Physics, Nizhny Novgorod, Russia (zlotnik@inbox.ru)

Origin of the fine structure as quasi-harmonic parallel drifting stripes of enhanced brightness (zebra pattern) in the dynamic spectrum of the kilometric Jupiter radiation is discussed. A possible interpretation of the observed structure basing on the effect of double plasma resonance in the Jupiter magnetosphere is analysed. The effect is the enhanced generation of plasma waves in the regions where the local electron plasma frequency coincides with harmonics of the electron gyrofrequency. It is shown that the observed increase of the frequency spacing can be realized in the framework of the double plasma resonance model only if the signs of the gradients of the magnetic field and the electron number density in a radiation source are the same. A possible role of the double plasma resonance at the low hybrid frequency in the kilometric radiation from Jupiter is also considered. Parameters of the sources necessary to provide the coincidence of the expected and observed features of the Jovian zebra pattern are obtained.

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