RADIO PULSATIONS FROM THE AD LEO FLARE AND ELECTRIC CURRENT DIAGNOSTICS

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Using pulsations characteristics of AD Leo radio flares observed by Bastian et al. (1990) with the Arecibo 300m and by Stepanov et al. (2001) with the Effelsberg 100m radio telescopes the values of electric currents (7–40) $\times 10^{11}$ A and plasma parameters in stellar flares are determined. It was shown that radio pulsations can be due to both "sausage" oscillations as well as current RLC-oscillations in a flare loop (Zaitsev et al. 1988, 2004). Explanation of very intense radio bursts ($T_b \approx 10^{15}$ K) in terms of coherent plasma emission gives the magnetic field value (100–300 G) and the electron number density (10^{10}–10^{11} cm^{-3}) in the flares. The energy of electric current stored in the flares was estimated as (1–50) $\times 10^{25}$ J. It is shown that $< \sim$10% of stored energy was released in the flares.

References

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