Contribution ID: **292** Type: **Poster**

# Influence of External Radiation upon the Second Hysteresis Zone

*Tuesday 3 October 2017 16:30 (1h 50m)*

Josephson junctions characteristics can be easily manipulated by their control parameters, which is of high importance for their applications. Such parameters include the dissipation parameter, which can be controlled by the temperature variation, and the coupling parameter, which is dependent on the structure of the junction. It was found that for some values of dissipation and coupling parameters appears an additional hysteresis zone[1]. The manifestation of second hysteresis zone was found to have a connection with the c-axis charge traveling wave [1,2].
In the present work, we investigate the range of coupling and dissipation parameters at which occurs the second hysteresis zone, along with the effect of the monochromatic radiation upon the phase dynamics of that system. The additional superconducting current is produced by external radiation. As a consequence appear the Shapiro steps, along with their subharmonics on the current-voltage characteristic. Are studied in detail the current-voltage characteristics of the system, and the temporal dependences of charge oscillations with corresponding Fast Fourier Transfers. Possible applications of the found phenomena are discussed.

Acknoledgments. This work was partially supported by the Romanian Ministry of National Education by the contract PN 16 47 0101 with UEFISCDI and project 2016 / 25.of JINR-Romania collaboration.

[1] A. Zubarev, M.Cuzminschi, Yu. M. Shukrinov; Influence of dissipation and coupling on collective behavior in systems of Josephson Junctions, international symposium "Nanophysics & Nanoelectronics",Nizhny Novgorod, Rusia March, 13-16, 2017; t 1, p 19
[2] Shukrinov, Yu M., and M. Hamdipour. "The c-axis charge traveling wave in a coupled system of Josephson junctions." JETP letters 95.6 (2012): 307-313.

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**Session Classification:** Poster session