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Investigations of spontaneous arc extinction in Cs-Ba plasma of highly-efficient switching converters. ALEKSANDR MUSTAFAEV, Saint Petersburg Mining University, Russia, VLADIMIR SOUKHOMLINOV, Saint Petersburg State University, Russia, ARTIOM GRABOVSKIY, EVGENIA SHTODA, Saint Petersburg Mining University, Russia — This talk deals with the results of the research into plasma's electro kinetic parameters of Knudsen Cs-Ba high-current diode and triode switching converters. The investigations of the spontaneous arc extinction in the devices with a fine-mesh grid, operating in the collisionless mode, have been carried out. In order to study the mechanism of the arc extinction, the time dependencies of the luminosity of a series of CsI, BaII and BaI lines were obtained. The use of Cs-Ba mixture, where cesium is a plasma-forming component, allowed to obtain emission currents from the cathode up to 100 A/cm^2 in Cs-pressure range 10^{-3}-10^{-2} Torr and, thus, easily attain the electric power density of 5 kW/cm^2 and the efficiency more than 95%[1,2]. It has been established, that the arc extinction in the triode, having the fine-mesh, highly-transparent grid, is due to the high degree of atom ionization and to the escape of atoms from the spacing, while the large duration of the current pulse is determined by atom desorption from the electrodes. 1. A. Mustafaev, V. Soukhomlinov, et. all. 44th ICOPS-2017. WE Posters-7. (Atlantic-City, New Jersey, USA). 2. A. Mustafaev, V. Soukhomlinov, O. Murillo. Fifty-Eighth Annual Meeting of the APS Division of Plasma Physics, 2016, P. JP10.00161. (San Jose, California, USA).

Aleksandr Mustafaev
Saint Petersburg Mining University, Russia

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