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Electronic steering of radiation beam by phase control in the arrays of uncoupled nonlinear transmission lines and Cherenkov-type HPM oscillators

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In the past few years, we have developed two approaches for creation of electronically controlled RF radiation beam steering: the first one is based on two- and four-channel gyromagnetic nonlinear transmission lines (NLTL) operating at the GW power level, which represents decimeter wavelength RF sources of nanosecond pulses and the second approach is based on Cherenkov superradiance two- and four-channel sources with 38 GHz carrier frequency. In the report, we present the results obtained earlier and analyze the further prospects from the point of view of physical and technical limitations to arrange new two-dimensional arrays. As an example, the project of a 7-channel RF source with gyromagnetic NLTLs is presented.
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Author: Prof. ROSTOV, Vladislav (Institute of High Current Electronics)

Co-authors: Dr GUNIN, Alexander (Institute of High Current Electronics); Dr ROMANCHENKO, Ilya (Institute of High Current Electronics); Dr RUKIN, Sergei (Institute of Electrophysics); Dr SHARYPOV, Konstantin (Institute of Electrophysics); Dr SHUNAILOV, Sergey (Institute of Electrophysics); Dr ULMASKULOV, Marat (Institute of Electrophysics); Prof. YALANDIN, Michael (Institute of Electrophysics)

Presenter: Prof. ROSTOV, Vladislav (Institute of High Current Electronics)

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