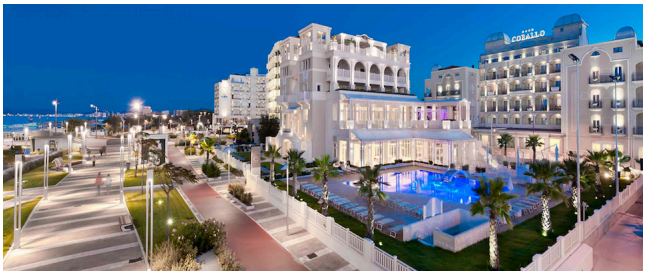

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PYROELECTRIC ELECTRON BEAM DEFLECTOR AND UNDULATOR

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Deflection of a relativistic electron beam by means of the pyroelectric deflector is demonstrated experimentally for the first time [1]. The operating principle of the pyroelectric deflector is based on the generation of a strong transverse electric field in a vacuum in the gap between a pair of pyroelectric crystals due to the pyroelectric effect. The experiments on observation of deflection of 7 MeV electron beam for 26 mrad in the transverse electric field with a strength of about 100 kV/cm arising at a variation of the temperature of a pair of pyroelectric crystals in vacuum are described. The possibility for application of the installed sequentially pyroelectric deflectors in pyroelectric undulator for production of undulator radiation by relativistic electron beam without any external high voltage power supply is discussed. This project has received funding through the MSCA4Ukraine project, which is funded by the European Union.

1. V.I. Alekseev, A.N. Eliseev, O.O. Ivashchuk, I.A. Kishin, A.S. Kubankin, A.N. Oleinik, V.S. Sotnikova, A.S. Chepurnov, Y.V. Grigoriev, A.V. Shchagin. Pyroelectric deflector of relativistic electron beam. Chinese Journal of Physics 77 (2022) 2298-2306.

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