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Method of Forming Profiles of Arbitrary Electron Beams

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Electron beams has been widely used in many application fields. Using electron beams generally requires their ability to control characteristics such as beam shape, spectrum and equitability. There are sets of collimators, filters and flutter in industrial plants to settle the issue. However, sometimes there are problems that cannot be solved by means of the existing sets. Besides of that, there are always tasks that require the formation of electron beams or small series of experimental sources for which there is no standard set of filters, collimators and flutter.

This paper presents a method to create a device for generating arbitrary electron beams. The method is based on experimentally obtained characteristics of electron beams, creating a mathematical model of electron beam, calculation of filter parameters and flutter. To produce filters and flutter is provided by means of rapid prototyping method. Samples calculated using fused deposition modeling, are made of specific density plastic material.

The proposed method will significantly simplify the work with electron beams in the cases when it is necessary to have exactly required shape and intensity distribution of the beam.

Primary author: CHEREPENNIKOV, Yury (Tomsk Polytechnic University)

Co-authors: DANILOVA, Irina (National Research Tomsk Polytechnic University); MILOICHIKOVA, Irina (National Research Tomsk Polytechnic University, Tomsk, Russia); STUCHEBROV, Sergei (Tomsk Polytechnic University)

Presenter: STUCHEBROV, Sergei (Tomsk Polytechnic University)

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