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SIMULATION OF VARIATION CHARACTERISTICS AT THERMOSTABILISATION OF 27 GHZ BIPERIODICAL ACCELERATING STRUCTURE

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A design of compact accelerating structure with high beam quality is one of the sufficient problems in contemporary X-ray systems development. A compact biperiodical accelerating structure for medical application with operating frequency 27 GHz was proposed to minimize the accelerator size and weight. More careful calculations of variation characteristics are necessary for such wavelength which is 3-10 times lower in comparison with conventional structures of 10 and 3 cm bands. Results of this study will be presented in the report. Also, a combination of high electromagnetic fields and long pulses at a high operating frequency leads to the temperature increase in the structure, thermal deformation and significant change of the resonator characteristics including the operating frequency. Three versions of temperature stabilization system was proposed and results of it's simulations will also discussed.

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