

# Reconstruction of the bremsstrahlung spectrum of electron accelerators

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Knowledge of the bremsstrahlung spectrum of electron accelerators is important not only for conducting research and testing for radiation resistance, but also for determining the attenuation factors of x-ray protective coatings. The existing techniques of spectrum reconstruction give solutions that result from incorrectly formulated problems. Use of supplementary a priori information and specialized regulation methods (for example, ridge regression) is necessary for such problems [1]. The experimental data is obtained with the absorption method. The spectrum is reconstructed by the solution of a linear first kind Fredholm integral equation. The problem is incorrect and has more than one solution. Besides, the input (experimental) data have measurement errors. The linear first kind Fredholm integral equation solvers were considered. We obtained the differential bremsstrahlung spectrum of the electron accelerator and the estimates of the confidence limits for statistical momenta (average value and dispersion) and for the group spectrum values. The code PRIZMA was used to calculate the electron bremsstrahlung in a diode assembly of the electron accelerator.

- [1] Verlan A F and Sizikov V S 1986 *Integral Equations: Methods, Algorithms, Programs. Handbook* (Naukova Dumka)