

Development of Ionization Detectors for the Main Parameters of Accelerated Beams, L.I. IOUDIN,

V.G. MIKHAILOV, V.N. LIECHTENSTEIN,

V.A. REZVOV, V.N. UNESZEV, KSRS RRC KI - A

detector for in-operation observation of the real spatial distribution of the beam current for ion sources with low energetic beams was designed and tested at Kurchatov Institute. It is based on the non-interrupting ionization beam cross-section detectors proposed before. A correction of the beam displacement by the detector electrical field was used in this design. A quality of the dependence on the dimensions of the detector and on the detector voltage was estimated experimentally. Such detectors are very useful for deficient ion sources. A detector design which produces electrical signals in response to the beam displacements from the beamline axes was developed and investigated. It will permit to use ionization detectors for operative correction of the beam position on the target. A system for in-operation measuring accelerated beam energies on the Kurchatov Institute cyclotron was prepared. Ionization detectors of microbunch parameters allow to measure it by the time-of-flight method. Computer data processing ensures the energy measurement with an accuracy of few fractions of a percent.