

Acoustic Measurements at DAW Accelerating Structures under Operating High RF Power Conditions, V. MOISSEEV, V. PETRENKO, SSSPI RRC KI; Yu. KRYLOV, S. KUZNETSOV, V. USHKOV, KSRS RRC KI - The acoustic method for measurements of disk and-washer (DAW) structures real electrodynamic characteristics under operating high RF power conditions (nonuniform temperature distributions, plasma, electron emission and charged particle flows) and for diagnostics of the beam acceleration process in DAW structures has been developed on the Kurchatov SR source linear accelerator. The RF field and charged particle acoustic effects in the structure metal construction are registered by a set of acoustic monitors installed on external surfaces of the structure. In the DAW structures, a short pulse acoustic excitation of any washer is attenuated on propagation along a structure strongly because of the resonant energy dissipation by near-by identical washers. This acoustic property of the DAW structure construction enables the local acoustic measurements at the eigenfrequencies of the washers. The RF field amplitude and beam losses distributions along the structure can be measured, the field loading by electron emission and the situations before breakdowns can be observed by the external acoustic monitors. The instrumentation used for acoustic measurements and the recent experimental results are described.