

**A Method of Non-Disturbing Diagnostic of Scanned
Electron Beam,**

S.P. KARASYOV,
R.I. POMATSALYUK, S.YU. PROKOPENKO,
I.N. SHLYAKHOV, A.EH. TENISHEV,

V.L. UVAROV, National Science Center, Kharkov
Institute of Physics & Technology (KFTI) - Operation
of industrial electron accelerators with scanned beam a
continuous non-disturbing control of main beam
parameters is required. A novel method of beam
diagnostic based on radiation-acoustic effect in
magnetostriction materials is described. As a beam
position detector a wire of FeCo alloy (50%) stretched
along scanning line is employed. Two
magnetostriction transducers are placed at each wire's
end outside radiation zone. Pulsed electron beam
induces two signals on the output of each transducer -
one coinciding with the beam pulse (of electromagnetic
origin) and the second being delayed by the time of
longitudinal sound transition from beam deposition
place along the wire (of radiation-acoustic origin). By
means of special electronic set-up and computer
application a transducer's signals processing is made. It
allows to control beam parameters (current, electron's
energy, radiation-zone width, beam-density distribution
along scanning line) in real-time regime and without
interruption of radiation program.