

# **Electron Beam Diagnostics at the Radiation Source ELBE**

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## **Abstract**

In the research center Rossendorf, the radiation source ELBE based on the superconducting LINAC is under construction. Last year the first accelerating module was commissioned. The electron beam parameters like emittance, bunch length, energy spread were measured. Here we present results of the measurements as well as methodics used to make the measurements. In the ELBE injector, where electron beam energy is 250 keV, the emittance was measured with the help of multislit device. Emittance of the accelerated beam was measured with the quadrupole scan method and is 8 mmxrad at 70 pC bunch charge. Electron bunch length was measured using coherent transition radiation technique. At the maximum design bunch charge of 70 pC the RMS bunch length is 2 ps. A set of online diagnostic systems is also under development. One of them is a system of stripline beam position monitors, which is also described here. A BPM resolution of about 10  $\mu\text{m}$  was achieved using logarithmic amplifier as the core element of the BPM electronics. A system of beam loss monitors based on the RF Helix cable working as an ionization chamber is intended to be another online diagnostic system.