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X-ray radiation for beam diagnostics

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For many years, the optical transition radiation (OTR) was successfully applied for beam diagnostics. However, distortions of the OTR images appear at decreasing of the beam size and increasing of beam current because of diffraction and coherent effects. The influence of these effects can be suppressed using the radiation in the X-ray range. In the present paper, the possible application of a few kinds of X-ray radiation to observe the beam profile is analyzed. The fields of applicability of characteristic X-ray radiation, parametric X-ray radiation, and diffracted transition X-ray radiation are found and discussed.

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