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Preliminary results for Smith-Purcell radiation from a skewed planar grating using the surface current model

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Preliminary intensity distributions for Smith-Purcell radiation generated by a grating with its period skewed with respect to the propagation direction of the particle beam will be presented. The results have been obtained using the well-established surface current model. An outline of the calculations will be described, along with qualitative descriptions of the radiation distributions generated using both finite and quasi-infinite planar gratings. The form of the radiation distributions compares favourably with that predicted by the conical diffraction radiation model of Sergeeva et. al. The use of skewed gratings could simplify the construction of a future single-shot longitudinal beam profile monitor.

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