

MICRO-BUNCH INSTABILITIES AS A SOURCE OF COHERENT THZ RADIATION

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Schottky barrier diodes (SBD) are known for their low noise, ultra-fast response and excellent sensitivity. They are often implemented as detectors in the millimetre wavelength regime. Micro-bunch instabilities (MBI) have been detected at many light sources around the world including the Diamond Light Source, UK. These MBI can result in bursts of coherent synchrotron radiation (CSR) with millimetre wavelengths. More research needs to be carried out with regards to the dynamics of MBI in order to confirm the simulations and to eventually harness the power of the CSR bursts. A single shot spectrometer has been designed and is under operation at the Diamond Light Source. It is composed of eight SBDs ranging from 33-1000 GHz. Unlike previous measurements carried out, each of the SBDs have been individually characterised thus making the results obtained comparable to simulations. In this paper, we present the assessment of each SBD in the spectrometer and the first results of the spectrometer's use in the beam.

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