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Prospects for photon science and beam dynamics studies of a THz undulator at FLUTE

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In recent years the interest in high intensity, short-pulse coherent THz radiation for non-linear experimental research and applications grew with upcoming high intensity lasers. In contrast to lasers, accelerators provide free electrons for which emission properties can be tailored to the demand at typically much higher repetition rates than high-intensity lasers can provide. Efforts are ongoing to augment short-bunch accelerators such as the European XFEL with THz radiation sources such as undulators.

At the far-infrared linac and test experiment (FLUTE) at KIT, we can facilitate experiments to investigate coherent THz radiation from different sources and provide short electron bunches. As an additional THz source, a superconducting undulator can be inserted and investigated.

In this contribution, we evaluate the opportunities of this THz undulator at FLUTE for linear accelerators and FELs in terms of photon science and beam dynamics.

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