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SP2: Study of a superconducting superradiant THz undulator at the European XFEL

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A THz radiation for pump-probe experiments etc. is under consideration at the European XFEL using laser-based and / or accelerator-based techniques. Wherein, a superconducting THz undulator as an afterburner would be one option because it has an advantage to produce wide-range radiation thanks to an ultra-short bunch and high repetition rate. A challenge to this approach is the usage of very high electron beam energy up to 17.5 GeV and the requirement of a high magnetic field. In this presentation, we will report the preliminary study of the THz undulator design and the radiation properties at the European XFEL.

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