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## **Simulations of the compact transverse-deflecting system for ultra-short electron bunch diagnostic**

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A compact TDS (transverse-deflecting system) has been proposed for diagnostics of extremely short electron bunches (up to single-digit femtosecond range). The main idea is to use terahertz radiation, produced from optical rectification of the facility's electron gun laser pulse. This provides an intrinsic synchronization between the electron bunch and the laser pulse. The proposed system is to be constructed at the test facility FLUTE (Ferninfrarot Linac- und Test-Experiment) at Karlsruher Institut für Technologie (KIT), which provides the opportunity to create electron bunches of variable length and at medium energy (7 MeV up to 90 MeV). Simulations in CST MICROWAVE STUDIO are carried out in parallel with the experimental activities to optimize the design of the system. In the present paper the simulation results for several possible designs will be presented.

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### **Footnotes**

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