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# Electromagnetic Simulations of a Metamaterial Target for Applications in Particle Accelerators

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Modern and future accelerators, such as linear colliders and X-ray Free Electron Lasers (X-FELs), will be capable of producing femtosecond and sub-femtosecond electron bunches with unprecedented intensity. Current techniques, such as the transverse deflecting cavity, have a resolution of approximately 1.3fs, but the beam is destroyed during the measurement process. A new non-destructive method, which employs a Left Handed Metamaterial (LHM) is promising as it provides additional flexibility in the generation and manipulation of radiation. In this report, we shall present our experimental plan, initial simulations and an overview of the infrastructure available to manufacture and verify the metamaterial's properties.

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