

# Full Energy Beam Exploitation at CLARA: Opportunities for Advanced Accelerator Experiments

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The Full Energy Beam Exploitation (FEBE) beamline and experimental hutch at CLARA will combine a 250 MeV FEL quality electron beam with a 100 TW class laser and will support exploitation of the CLARA beam for advanced acceleration experiments and research. This includes plasma based and structure based acceleration, with laser and beam drivers. FEBE has been designed to provide flexibility in both electron and laser beam delivery. We present an overview of capabilities of FEBE including: targeted electron beam parameters, broad range of beam diagnostic systems, TW laser parameters and integration, and timing and synchronisation system. Finally, the potential for supporting experiments aimed at overcoming some of the pressing novel acceleration challenges –e.g. beam quality perseveration, stability and synchronisation, staging –will be discussed. User exploitation of the CLARA facility is expected to begin early 2025.

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