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Mid-Infrared Laser Development for High Intensity Experiments

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Here we present progress on the high-intensity, short-pulse, multibeam mid-infrared (MIR) OPCPA laser system named Chimera, based at Imperial College London. With a primary beam in the MIR spectral range (centred at $3.7 \mu\text{m}$), the system lends itself to an abundance of potential high-field applications and experiments. Largely as a result of the lack of available gain media with the bandwidth to support an ultra-short pulse, Chimera uses a cascaded series of non-linear stages to generate and then amplify MIR light using parametric processes. This system is unique in the UK, and is, at present, one of only a few such systems worldwide.

Now entering into a commissioning and optimisation phase for experimental use, we present preliminary results of its first use in solid high harmonic generation experiments, as well as the plans for a MIR laser wakefield acceleration (LWFA) experiment.

This poster will be highlighting the laser technology, and can be complimented by a talk (if accepted) describing the results of a simulation campaign to plan and understand a future MIR LWFA experiment

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