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Prospects for laser triggering of large arrays of semiconductor switches

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In pulsed power technology, high voltage triggering circuits are one of the most critical components that will determine the global performance of a system. In the systems of the future, the role of trigger systems are even more critical as they trigger more components and produce the shaped-pulses by independent timing of individual switches or switch groups.

The prospect was aimed at determining whether high power lasers could command semiconductor switches arrays in high-power accelerator systems such as Future Circular Collider (FCC) beam dump. Among the traditional triggering techniques like passive, active and optical there is none that satisfies entirely the request.

The state of the art in pulse power lasers will by needed, we need to understand what laser capabilities are currently available, what capabilities are desired for the future, and what R&D activities are needed to bridge the gap. In the near future, we want construct a pulse-power facility to allow us to test laser triggering of a new high voltage semiconductor device for high power electronics applications.

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