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SP10: Optical Synchronization Controls Software

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Precise femtoseconds synchronization is required for many advanced applications and experiments conducted with laser light generated by X-ray free-electron lasers facilities like FLASH or E-XFEL. In order to obtain this goal dedicated laser based synchronization system has been developed to simultaneously lock all independent components, including accelerator modules and all external optical lasers. The system, except mechanic and optical part, includes advanced control electronics, firmware and high level software. This paper presents architecture and features of control software designed to achieve high performance, flexibility, scalability, maintainability of laser optical synchronization system based on MTCA.4 architecture which is currently being deployed at E-XFEL and is planned to be applied at FLASH accelerator.

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