

Measuring Pump-Probe Intervals with < 100 fsec Resolution for the SPPS

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Because of RF jitter, the interval between the Sub-Picosecond Photon Source x-ray probe and a visible laser pump pulse cannot be determined by a priori synchronization. It will be determined by a posteriori measurement, and data will be binned accordingly. We present here an accelerator-based technique to measure this interval using Compton backscattering of the probe laser off the electron beam, and conversion of time interval to position on a position sensitive detector. Depending on detector performance, single shot intervals of less than 100 fsec can be measured.