

## MS39-02 | APPLICATION OF ULTRAFAST STRAIN FIELDS FOR X-RAY PULSE SHORTENING AND PULSE PICKING

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We report a benchmark experiment that demonstrates shortening of hard x-ray pulses in a synchrotron-based optical pump - x-ray probe experiment. The pulse shortening device, a picosecond Bragg switch, reduces the temporal resolution of an incident x-ray pulse to 7.5 ps. We employ the Bragg switch to monitor propagating sound waves in nanometer-thin epitaxial films. With the experimental data we infer pulse duration, diffraction efficiency and switching contrast of the device. A detailed efficiency analysis shows, that the switch can deliver up to  $10^9$  -  $10^{10}$  photons/sec in high-repetition rate synchrotron experiments.