

## Single-shot measurement of pre-pulse generated by post-pulse

(参考和訳：ポストパルスによって生成されたプリパルスのシングルショット測定)

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### Abstract

With the development of chirped pulse amplification (CPA) technology, laser facilities with a power of more than 1 PW and a focused intensity of  $>10^{22}$  W/cm<sup>2</sup> have been constructed globally, reaching new levels of intensity regions in physics [1]. However, during experiments with such lasers, the problem is a pre-pulse, which interacts with the target before the main pulse interaction. The cause of a pre-pulse generation is extremely complicated because it depends on the amplification method of the laser system and the performance of its components, such as the optical elements and their quality.

In recent years, investigations into the formation mechanisms of various types of pre-pulses have been actively carried out. In this context, the generation of a pre-pulse from a post-pulse of the main pulse has attracted significant attention [2]. The primary mechanism of a pre-pulse is derived from the change in spectra and phase caused by the nonlinear response of the refractive index.

In this seminar, I introduce in detail of investigation of pre-pulse generated by post-pulse with single-shot measurement of self-referenced spectral interferometry (SRSI) [3]. The capability of SRSI in terms of the single-shot measurements of the temporal contrast have been experimentally demonstrated, and the results clearly indicate that the energy levels of the pre- and post-pulses are increased in proportion to the square of the B-integral [4].

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