

Abstract Submitted  
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**Light scattering by a dense ionization plasma wave with a tunable velocity** ALEXEI ZHIDKOV, TAKASHI FUJII, CRIEPI, Japan, TIMUR ESIRKEPOV, JAMES KOGA, JAEA, Japan, KOSHICHI NEMOTO, CRIEPI, Japan, SERGEI BULANOV, JAEA, Japan — An optically-dense ionization wave (*IW*) produced by two femtosecond laser pulses focused cylindrically and crossing each other is shown to be an efficient coherent *x*-ray converter. The resulting velocity of a quasi-plane *IW* in the vicinity of pulse intersection increases with the angle between the pulses from the group velocity of ionizing pulses to infinity allowing an easy tuning the wavelength of *x*-rays. We study the conversion of a coherent light to *x*-rays by means of particle-in-cell simulation and by solution of continuous equation with the correct current. The *x*-ray spectra of a converted, lower frequency coherent light change from the monochromatic to a high order harmonic-like with the duration of ionizing pulses and the intensity of scattered pulses; the spectrum are not symmetrical at  $V < c$  and  $V > c$ .

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