Theoretical Description of the Third Order Parametric Wave Mixing in a Gas-Filled Capillary of Femto-Second Laser Pulse

CHEN Bao-Zhen and HUANG Zu-Qia

Institute of Low Energy Nuclear Physics, Beijing Normal University, Beijing 100875, China
(Received: 2004-1-5; Revised:)

Abstract: The theoretical signal-pressure curves are calculated from approximate analytical solutions of the coupled equations describing the third order parametric wave mixing in a gas-filled capillary of femto-second laser pulses. The comparison with the corresponding experimental curves suggests that the following three factors exert important influences on the degree of fitting between the theoretical and experimental results: the walk-off, the phase modulation, and the third order harmonic of idler pulse.

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