

Abstract Submitted
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Control of Molecular Rotation with a Chiral Train of Ultrashort Pulses¹ SERGEY ZHDANOVICH, ALEXANDER MILNER, CASEY BLOOMQUIST, The University of British Columbia, JOHANNES FLOSS, ILYA AVERBUKH, The Weizmann Institute of Science, JOHN HEPBURN, VALERY MILNER, The University of British Columbia — Trains of ultrashort laser pulses separated by the time of rotational revival (typically, tens of picoseconds) have been exploited for creating ensembles of aligned molecules. We introduce a chiral pulse train - a sequence of linearly polarized pulses with the polarization direction rotating from pulse to pulse by a controllable angle. The chirality of such a train, expressed through the period and direction of its polarization rotation, is used as a new control parameter for achieving selectivity and directionality of laser-induced rotational excitation. The method employs chiral trains with a large number of pulses separated on the time scale much shorter than the rotational revival (a few hundred femtosecond), enabling the use of conventional pulse shapers.

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Sergey Zhdanovich
The University of British Columbia

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