

Abstract Submitted
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Coherent Perfect Rotation MICHAEL CRESCIMANNO, NATHAN DAWSON, JAMES ANDREWS, Dept. of Physics, Youngstown State U. — Two classes of conservative, linear, optical rotary effects (optical activity and Faraday rotation) are distinguished by their behavior under time reversal. In analogy with coherent perfect absorption, where counterpropagating light fields are controllably converted into other degrees of freedom, we show that in a linear-conservative medium only time-odd (Faraday) rotation is capable of coherent perfect rotation, by which we mean the complete transfer of counterpropagating coherent light fields into their orthogonal polarization. This highlights the necessity of time reversal odd processes (not just absorption) and coherence in perfect mode conversion and may inform device design.

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