

Abstract Submitted
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Exciting BEC's with Spin Orbit Coupling¹ MICHAEL FORBES,
EDWARD DELIKATNY, Washington State Univ — In this talk, I will discuss
the theory behind several techniques for exciting and manipulating Bose Einstein
Condensates (BECs) with Spin-Orbit Coupling (SOC). In particular, I shall discuss
how the SOC can be used to engineer a dispersion relationship to realize a system
with negative-mass hydrodynamics, and then how to probe properties of this unique
system by dynamically varying the SOC parameters and manipulating the optical
potentials so as to produce shockwaves, solitons, and turbulence. This theory will
be compared with experimental results from P. Engels group, and features of their
experiment will be explained.

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