

Abstract Submitted  
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**The Effects of Disorder on a Quasi-2D System of Ultracold Atoms**

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and Technology — An ultra-cold gas of atoms can be used to create many different  
model Hamiltonians. When tightly confined in one spatial dimension, the gas can  
become effectively two-dimensional. At low temperature, a quasi-2D Bose gas un-  
dergoes a Berezinskii- Kosterlitz-Thouless phase transition to a superfluid, mediated  
by the binding and unbinding of vortex pairs. As disorder affects vortex transport  
properties, a slight amount of fine- grain disorder in the potential energy may alter  
the properties of this phase transition. We will present experimental observations  
of a 2D Bose gas of rubidium atoms in the presence of disorder created by a laser  
speckle field.

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