

Abstract Submitted  
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**Interaction-induced localization of an impurity in a trapped Bose-Einstein condensate**<sup>1</sup> RYAN KALAS, D. BLUME, Dept. of Physics and Astronomy, Washington State University — We study the ground state properties of a trapped Bose condensate with a neutral impurity. By varying the strength of the attractive atom-impurity interactions the degree of localization of the impurity at the trap center can be controlled. As the impurity becomes more strongly localized the peak condensate density, which can be monitored experimentally, grows markedly. For strong enough attraction, the impurity can make the condensate unstable by strongly deforming the atom density in the neighborhood of the impurity. This “collapse” can possibly be investigated in bosenova-type experiments.

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