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Charged impurities in a BEC RACHEL SAPIRO, DAVID ANDERSON, University of Michigan, RUI ZHANG, Harvard University, GEORG RAITHEL, University of Michigan — We present an apparatus for studying the interactions between a 87Rb BEC and ions or other impurity particles. Our system is unique among BEC machines in that we have the ability to cancel stray electric fields with high precision. This allows us to do controlled experiments in which a single or small number of charged impurities interact with a BEC for a significant amount of time. Furthermore, this system allows for sub-micron- resolution spatial imaging of ions or Rydberg atoms. This creates the possibility of high-resolution tomography of structures in a BEC or a cold atom cloud.

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