

Abstract Submitted  
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**<sup>39</sup>K Bose-Einstein condensates in two and three dimensions with tuneable interactions** ROBERT CAMPBELL, ROBERT SMITH, NAAMAN TAMMUZ, SCOTT BEATTIE, STUART MOULDER, ZORAN HADZIBABIC, University of Cambridge, UK — We report on the production of <sup>39</sup>K Bose-Einstein condensates of over  $4 \times 10^5$  atoms with broadly tuneable interactions [Campbell et al., Phys. Rev. A **82**, 063611 (2010)]. Condensation is achieved via a combination of sympathetic cooling with <sup>87</sup>Rb in a QUIC magnetic trap and direct evaporation in a large-volume crossed optical dipole trap, where we exploit the broad Feshbach resonance at 402.5 G to tune the <sup>39</sup>K interactions from weak and attractive to strong and repulsive. We also discuss the progress of our experimental investigation into the role of interactions on the low temperature behaviour of two-dimensional Bose gases.

Robert Campbell  
University of Cambridge, UK

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