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**Bose Polarons in an ultracold mixture of  $^{87}\text{Rb}$  and  $^{23}\text{Na}$  atoms<sup>1</sup>**

LINTAO LI, ZHICHAO GUO, FAN JIA, DAJUN WANG, The Chinese University of Hong Kong — We report the progress on investigating the Bose polaron problem with a mixture of ultracold Bose-Bose mixture of  $^{23}\text{Na}$  and  $^{87}\text{Rb}$  atoms. We prepare the Bose polaron by immersing heavy  $^{87}\text{Rb}$  impurities in the Bose-Einstein condensate of  $^{23}\text{Na}$ . Using radio frequency spectroscopy, we investigate the polaron injection spectrum and its dependence on the impurity concentration while the impurity-BEC interaction is tuned by a Feshbach resonance. In particular, we plan to study the impurity concentration dependence of polaron energy, which may provide more information on polaron problem beyond the properties of single polaron with zero momentum.

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