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Heteronuclear Feshbach resonances in a mixture of ultracold ^{87}Rb and ^{133}Cs K. PILCH, A. LANGE, A. PRANTNER, G. KERNER, F. FERLAINO, H.-C. NAEGERL, R. GRIMM, Institut fuer Experimentalphysik; Institut fuer Quantenoptik und Quanteninformation, Oesterreichische Akademie der Wissenschaften, Innsbruck, Austria — We present the first observation of heteronuclear Feshbach resonances in a bosonic mixture of ultracold ^{133}Cs and ^{87}Rb. We give an overview of our experimental setup and the procedure of all-optical sample preparation. One of the key ingredients is the use of simultaneous degenerate Raman sideband cooling on both species. We perform Feshbach spectroscopy on a mixture of $\sim 10^6$ atoms, optically trapped at a temperature of a few μK, by recording trap loss. We find a rich structure of interspecies Feshbach resonances within a magnetic field ranging from 0G to 300G. A consistent assignment of the observed Feshbach resonances will allow us to quantify the interspecies collisional properties. We discuss potential pathways towards obtaining a double-degenerate bosonic quantum gas and towards the production of ground state RbCs molecules.

Karl Pilch
Deutsche physikalische Gesellschaft

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