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Abstract for an Invited Paper
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**Realizing a Kondo-correlated state with ultracold atoms**[1]

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We propose a novel realization of Kondo physics with ultracold atomic gases. It is based on a Fermi sea of two different hyperfine states of one atom species forming bound states with a different species, which is spatially confined in a trapping potential. We show that different situations displaying Kondo physics can be realized when Feshbach resonances between the species are tuned by a magnetic field and the trapping frequency is varied. We illustrate that a mixture of $^{40}$K and $^{23}$Na atoms can be used to generate a Kondo correlated state and that momentum resolved radio frequency spectroscopy can provide unambiguous signatures of the formation of Kondo resonances at the Fermi energy. We discuss how tools of atomic physics can be used to investigate open questions for Kondo physics, such as the extension of the Kondo screening cloud.

[1]DFG BA 4371/1-1, Harvard-MIT CUA, DARPA OLE, AFOSR Quantum Simulation MURI, AFOSR MURI Ultracold Molecules, Atomotronics, ARO MURI Quism, EU ERC Ferlodim