Investigating the BCS-BEC crossover region using ultra-cold fermionic atoms

JOHN STEWART, JOHN GAEBLER, CINDY REGAL, DEBORAH JIN, JILA, National Institute of Standards and Technology and University of Colorado, Department of Physics, University of Colorado, Boulder, CO 80309-0440 — Progress towards the experimental realization of the BCS-BEC crossover has opened a rich area of physics. Starting with a two-component gas of $^{40}$K atoms cooled to quantum degeneracy we can create strong, tunable interactions through the use of a magnetic Feshbach resonance. We report on recent experiments including current thermodynamics measurements.