

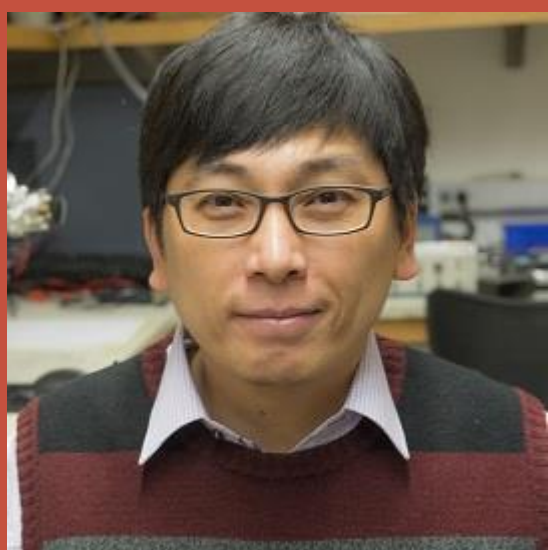
Bose enhanced quantum chemistry

【摘要】

Chemical reactions in the quantum degenerate regime are governed by nonlinear mixing of matterwave fields. For Bosonic reactants and products, coherent dynamics and bosonic enhancement are two unique features of reactions in the quantum regime, as known as “quantum super-chemistry”.

In this talk, I report the observation of collective oscillations between atomic and molecular condensates. Faster coherent couplings in samples with higher densities indicates Bose enhanced reactions. We present a quantum field model which well describes the dynamics and identifies three-body recombination as the dominant reaction process. Our findings offer new guiding rules of collective chemical reactions at quantum degeneracy

【报告人简介】



Cheng Chin earned his B.S. degree in Physics from National Taiwan University in 1993 and his Ph.D. degree in Physics from Stanford University in 2001 under the advisory of Dr. Steven Chu. He conducted postdoctoral research at Stanford (2001~2003) and at Innsbruck University (2003~2005). He joined the University of Chicago in 2005 and has been a full professor in the Department of Physics, the Enrico Fermi institute, and the James Franck institute since 2012. He has also been a visiting professor at Innsbruck University (Austria), ETH (Switzerland), Rice University, MIT, Academic Sinica (Taiwan), Univ. of Ulm(Germany), Univ. of Munich(Germany), Max Planck institute (Germany), JILA, Tsinghua University (China) and National Sun Yat-Sen University (Taiwan)..

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