

COLLOQUIUM BY LU ZHENG TIAN

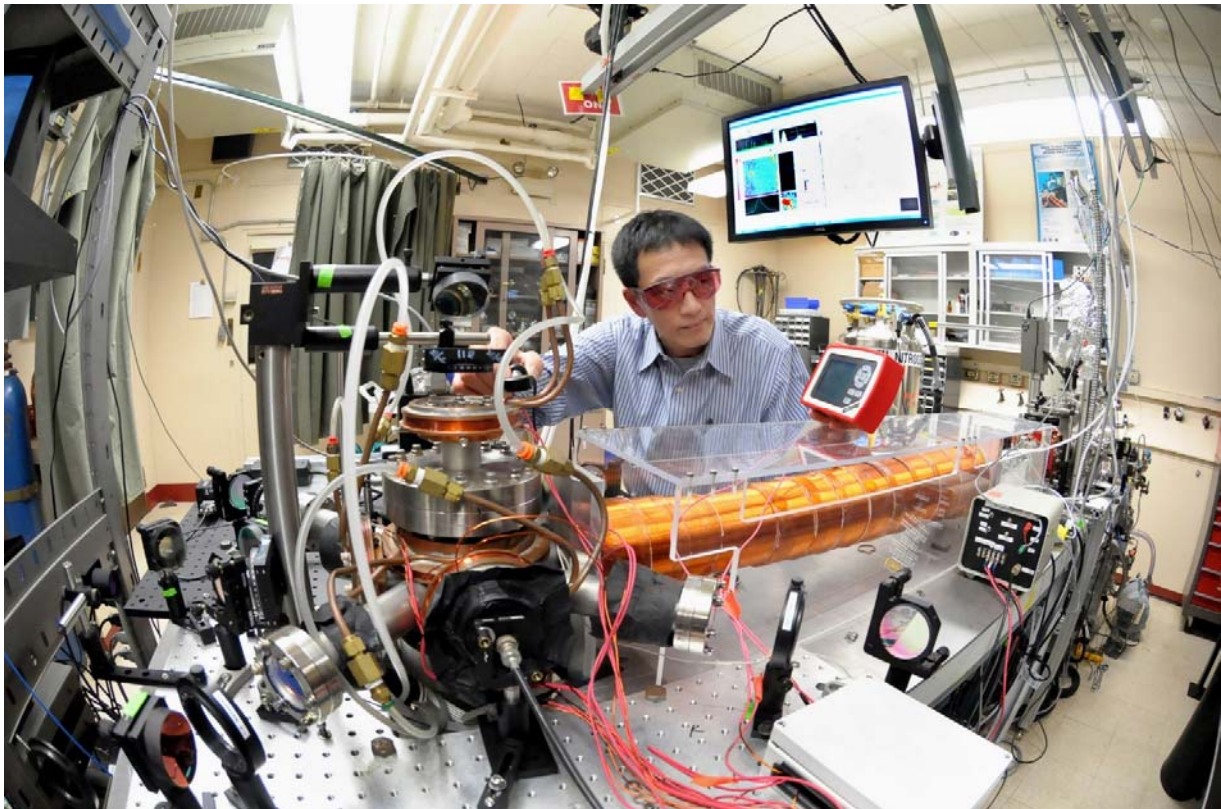
ATOM TRAP, KRYPTON-81, AND GLOBAL GROUNDWATER

TIME: 5-6PM, WEDNESDAY 14 OCTOBER 2015

VENUE: AB 1079

REFRESHMENTS PROVIDED INSIDE THE VENUE

Speaker: Zheng-Tian Lu, Hefei National Laboratory for Physical Sciences at the Microscale
Department of Modern Physics, University of Science and Technology of China



ABSTRACT:

The long-lived noble-gas isotope ^{81}Kr is the ideal tracer for water and ice with ages of 105 – 106 years, a range beyond the reach of ^{14}C . ^{81}Kr -dating, a concept pursued over the past five decades by numerous laboratories employing a variety of techniques, is finally available to the earth science community at large. This is made possible by the development of the Atom Trap

Trace Analysis (ATTA) method, which captures and detects individual ^{81}Kr atoms, whose isotopic abundances are in the range of 10^{-14} to 10^{-12} . In collaboration with earth scientists, we are dating groundwater and mapping its flow in major aquifers around the world. We have also demonstrated for the first time ^{81}Kr -dating of old ice.

BIO:

Zheng-Tian Lu is a Professor of the University of Science and Technology of China (USTC). He received a B.Sc. from USTC in 1987 and a Ph.D. from UC Berkeley in 1994. He was a Senior Physicist at Argonne National Laboratory prior to rejoining USTC in 2015. Throughout his career, Lu has been developing techniques of laser manipulation and laser spectroscopy of atoms, and applying these techniques to ultrasensitive trace analysis, studying nuclear structure, and testing fundamental symmetries. He received a U.S. Presidential Early Career Award in 2000, was elected a Fellow of the American Physical Society in 2006, and received the Society's Francis M. Pipkin Award in 2009. He currently serves as the Chair of the Society's Topical Group on Precision Measurement and Fundamental Constants.