

4:15 – 5:30 pm, Tuesday, September 18, 2012

Refreshments Served Starting 4:00 pm

Science Engineering Building (SEB) Rm. 1240

Frontiers of Fusion Energy Research: An Overview of Engineering Science Seminars

Dr. Ke-Xun Sun, UNLV

Fusion is an ultimate solution for Earth's energy needs. Inertial Confined Fusion (ICF) has made many progresses and is close to make the landmark breakthrough of achieving ignition. ICF science and technology demand cutting edge research in laser driving, target design, High Energy Density Physics (HEDP), diagnostics instruments, and fusion power generation. The Engineering Science Seminar Series at UNLV in Fall 2012 provides a series of lectures given by leading experts in HEDP Diagnostics at largest US research facilities. The subjects are National Ignition Facility (NIF), Z-Machine (Z), Jupiter Laser Facility (JLF), and Las Alamos Neutron Science Center (LANSC), NIF Neutron imaging, NIF X-ray imaging, and Photon Doppler Velocimetry. In this overview lecture, we will preview the key physics concepts of these seminars, and clarify their interconnections. We will further identify important and promising fusion research directions such as Fast ignition, Shock ignition, LIFE, and Hybrid Fusions, and their requirements for diagnostics instrumentation. We will introduce our efforts in meeting these challenges.

Speaker Biography

Ke-Xun (Kevin) Sun, Ph.D, P.E.

Dr. Sun graduated with a BS degree in physics from Peking University, an M.Eng. degree in Electrical Engineering from Nagoya University, and a Ph.D degree in Physics from Massachusetts Institute of Technology, US. He conducted postdoc research at Stanford University on novel laser interferometry. He was an entrepreneur and conducted industrial research on optics, electronics, and acoustics. Since 2003, he worked at National Security Technologies (NSTec) Livermore on HEDP diagnostics especially X-ray cameras, radiation hardness of semiconductor devices, and many SDRD projects. In parallel, he worked as the Chief Scientist and Technology Manager of several space flights payload missions at Stanford University, where he invented novel instruments for precision measurement in space flights.

In 2012, he came to UNLV as a Professor in Department of Electrical and Computer Engineering, and an Adjunct Professor in Department of Physics and Astronomy. His current research areas include HEDP diagnostics, radiation hard AlGaIn imagers, high speed electronics, ultrafast lasers, space charge effects, nanotechnologies, and quantum optics. Dr. Sun has won a NTS Performance Award for his work on pulsed lasers. He led a fast X-ray diagnostics team which won DOE Award of Excellence (Defense Program).