

High Energy Density Plasma Diagnostics

Tuesdays and Thursdays, 2:00-3:20 PM PDT, April 1 – June 5, 2025

This 20-lecture postgraduate course will be delivered via WebEx by LLNL, SNL, and GA personnel



Kilkenny



Koziowski



Hilsabeck



Moody



Ali



Swadling



Chen



Hansen



Izumi



Trosseille

Fusion neutrons, DT targets and diagnostic engineering:

by J. Kilkenny, B. Koziowski, T. Hilsabeck

- L1-April 1: Intro to fusion plasma and diagnostics
- L2-April 3: Overview of techniques for neutron diagnostics
- L3-April 8: Neutron time-of-flight, Tion, Viso
- L4-April 10: Overview DT layering & measurement techniques
- L5-April 15: Overview diagnostic engineering requirements

Optical diagnostics: by J. Moody, G. Swadling, S. Ali

- L6-April 17: Overview of techniques for optic diagnostics, backscattering, and side scattering
- L7-April 22: Optical and X-ray Thomson Scattering
- L8-April 24: Velocity Interferometer for Any Reflector - VISAR

X-rays: by J. Kilkenny, H. Chen

- L9-April 29: Overview of techniques for x-ray diagnostics, photoelectric effect, XRD
- L10-May 1: Measuring hohlraum T_{rad} -Dante
- L11-May 6: NIF x-ray streak camera and framing camera
- L12-May 8: X-ray lines spectroscopy-I: solar opacity exp
- L13-May 13: X-ray lines spectroscopy-II: NIF implosion
- L14-May 15: X-ray and particle imager
- L15-May 20: X-ray and particle backlighter

General: by S. Hansen, C. Trosseille, N. Izumi, H. Chen, J. Kilkenny

- L16-May 22: Overview Z-pinch science & diagnostics
- L17-May 27: Overview detectors for HED diagnostics
- L18-May 29: Overview data analysis techniques
- L19-June 3: Diag. needs for burning plasma & IFE exp.
- L20-June 5: Summary of the course