

# THE TENTH LOS ALAMOS DYNAMICS SUMMER SCHOOL

At Los Alamos National Laboratory, Los Alamos, New Mexico

June 8<sup>th</sup> through August 7<sup>th</sup>, 2009

We are currently soliciting applicants for the tenth Los Alamos Dynamics Summer School. The purpose of this summer school is to focus a select group of prospective upper level undergraduate students and first year graduate students on the broad fields of engineering dynamics with specific applications to structural diagnostics and non-destructive evaluation. The summer school has two focus areas. First, the multi-disciplinary nature of research in engineering dynamics will be emphasized throughout the summer school. To this end, the students will be assigned to teams where they will work with a mentor on a research topic that has both an analytical and experimental component. Second, efforts will be made to develop the students' written and oral communications skills. The students will be required to document their progress and make several oral presentations during the course of the summer. More information regarding the Summer School can be found at <http://www.lanl.gov/projects/ei/DSS/index.shtml>.

**Students:** The program is designed for 15 upper division (Junior or Senior) undergraduate students or first year graduate students. Attempts will be made to identify high quality students from diverse backgrounds including academic and institutional diversity, as well as human diversity. Acceptance into the program will be based on academic record and letters of recommendation. As a general guideline, students should have sufficient academic achievement that they are, or will be, eligible for graduate school. A variety of academic disciplines are being sought including aerospace, civil, mechanical, and electrical engineering, computer science, and mathematics/statistics and disciplines related to nondestructive evaluation. **Salaries will range from approximately \$15-22/hr** depending on academic standing. **A relocation allowance is also provided for travel to and from Los Alamos.** We will work with the students to find housing after they have been accepted into the program. More information about LANL's student programs can be found at <http://www.lanl.gov/education>. **This program is limited to US citizens.**

**Projects:** The students will be placed into 3 person teams and will be assigned a research activity that can be completed in an intense 9 week time frame. The goal is for the students to produce results and document their activities in a manner suitable for reporting at conferences. The 2009 Summer School students will present their research results during the February 2010 International Modal Analysis Conference in Jacksonville, FL.

**Mentors:** Each research group will have a LANL staff member acting as a mentor for their project. Visiting Lecturers will give talks on current research in engineering dynamics and structural diagnostics.

**Field Trips:** In addition to guest lectures, the students will participate in field trips during the program.

**How to Apply:** Students should email ([womack@lanl.gov](mailto:womack@lanl.gov)), mail, or FAX (505-663-5225) 1.) A **1-page cover letter** describing your interest in this summer school as well as your near term (1-3 year) academic and professional goals; 2.) **resume**; 3.) **official transcripts** (a copy is fine for application purposes, but the original will be needed prior to the start of the summer school); and 4.) at least **one letter of recommendation** to:

Kathie Womack

MS T001

Los Alamos National Laboratory

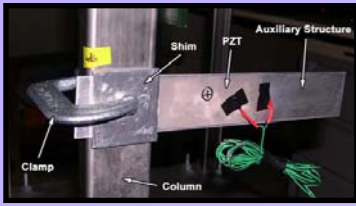
Los Alamos, NM 87545

Applications must be received by **Jan 26<sup>th</sup>, 2009**. Acceptance notifications will be sent by **Feb 9<sup>th</sup>, 2009**.

Questions about the Summer School can be sent to **Chuck Farrar** ([farrar@lanl.gov](mailto:farrar@lanl.gov)), **Matt Bement** ([bement@lanl.gov](mailto:bement@lanl.gov)), or **Gyuhae Park** ([gpark@lanl.gov](mailto:gpark@lanl.gov)) or visit the "FAQ" and "advice from former students" portion of the summer school web page <http://www.lanl.gov/projects/ei/DSS/index.shtml>

# Los Alamos Dynamics Summer School

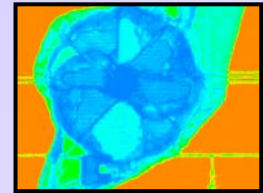
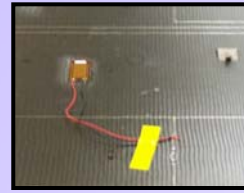
## Energy Applications



- Piezoelectric and thermoelectric materials convert ambient energy into useful electricity.
- Health monitoring of wind turbines



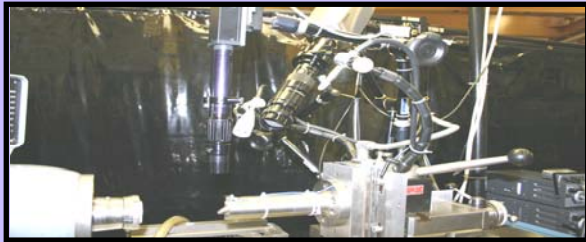
## Non-destructive Evaluation



- Ultrasonic inspection for cracks, voids and delamination in metals and composite materials
- Commonly used to validate damage propagation for structural health monitoring research

## Typical Projects

### Manufacturing Process Monitoring



- Monitor product quality in real-time
- Model and control process physics

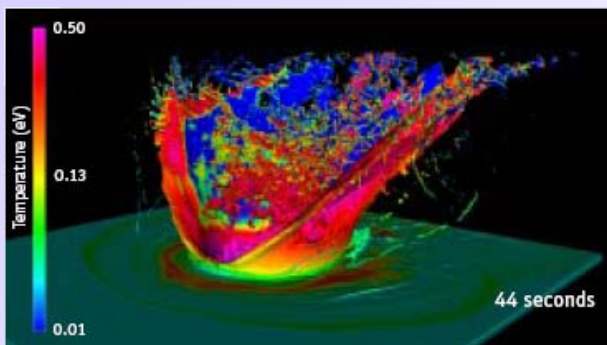
### Bio-Mechanical Applications



- Vibration monitoring and analysis of femoral implant installation to prevent femoral fracture

## Lecture Topics

- *Data Acquisition (Labview, etc.)*
- *Controls*
- *Vibrations*
- *Nonlinear Dynamics*
- *Applying to Grad School*
- *Satellite Design*
- *Asteroid Impact*



## About Los Alamos and LANL

- *18,000 population*
- *7,300 ft elevation*
- *Lots of outdoor activities*
- *35 miles from Santa Fe*
- *LANL employs ~ 11,000 (> 1,000 summer students)*

