Stanford



# Brian Lantz

Professor (Research) of Applied Physics

## Bio

### ACADEMIC APPOINTMENTS

- Professor-Research, Applied Physics

## Research & Scholarship

### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Brian Lantz and his group work on instrumentation for LIGO - The Laser Interferometer Gravitational-wave Observatory. His group specializes in seismic isolation and control for current and future detectors and works closely with the LIGO detectors. Currently work includes development of phase tracking interferometers to allow coordinated control of the LIGO seismic isolation tables at the sub-micron scale, model-based controls to reduce the noise of the LIGO suspensions, integration of new rotation sensors (designed at the Univ. of Washington), control designs to allow good performance despite wind and earthquakes, and design of new suspensions for 100+ kg mirrors envisioned for LIGO upgrades. These technologies are key to improving the low frequency (10-30 Hz) noise of the LIGO detectors, allowing us to observe the mergers of heavier black holes and significantly improve our early warning for the mergers of neutron stars.

His group is collaborating with SLAC to use the phase tracking interferometer to provide feedback control to X-ray optics in the LCLS free electron laser. With precise feedback control, the optics can be moved, positioned, and stabilized at the sub-micron scale - an enabling technology for next-generation regenerative X-ray laser amplifiers.

## Teaching

### STANFORD ADVISEES

**Postdoctoral Faculty Sponsor**

Alexandra Mitchell