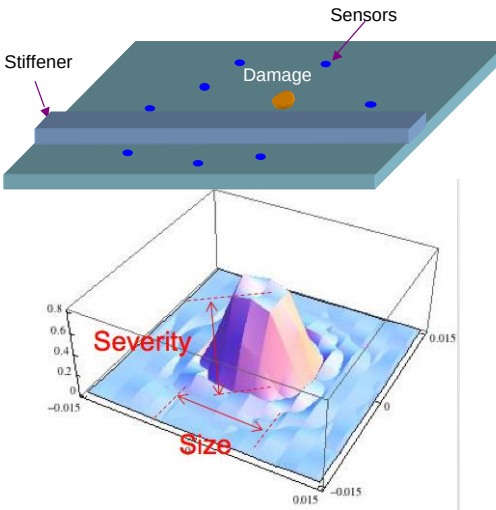
UNSW SYDNEY | Australia's Global University

School of Mechanical and Manufacturing Engineering

Structural Health Prognostics

Our technology

Our group has develop a world leading expertise in structural health and prognostics technology. In particular we have advanced new quantitative imaging methods for characterising severity of structural damage using in-situ sensors. Distributed sensors, such as PZT actuators, can generate and record guided waves in structures. Based on the scattered wave produced a structural damage, either linear and nonlinear higher harmonics, detailed image of the damage location and severity can be constructed. The results serve as the key input to predictive models for the safety of the system.



Key areas of expertise

1 Localisation and quantification of damage

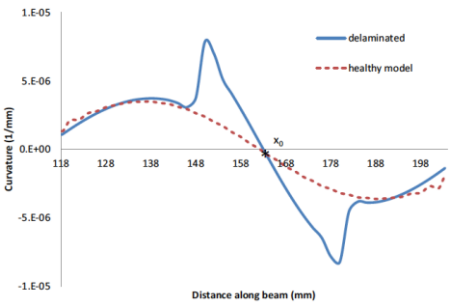
- Time-reversal imaging technique to image the location of damage and to quantify the severity.
- Integration of multiple active and passive sensors.

2 Safety prognostics

- Estimate fatigue life and structural strength using crack growth modelling and fracture mechanics
- Component level and system level modelling

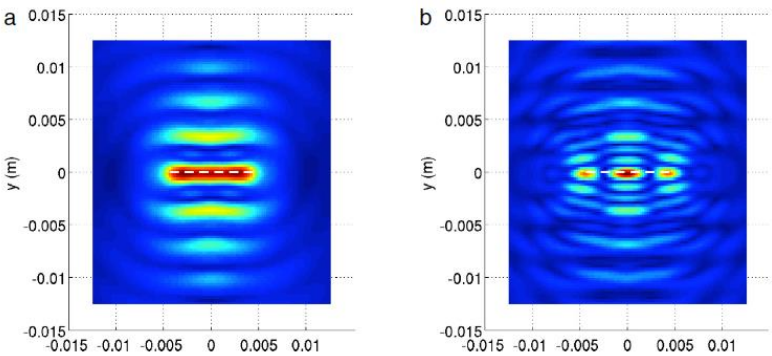
3 Modal curvature technique

- Contact-less techniques to identify and quantify defect by monitoring changes in curvature using using non-contact techniques, such as scanning laser vibrometers.
- Nonlinear harmonics provide unique markers for detection of damage.



Research team

- Professor Chun Wang (王春晖): Head of School of Mechanical and Manufacturing Engineering
- Dr. Philippe Blanloeuil: Research Fellow
- Dr. Shuai He: Research Fellow



新南威尔士大学火炬创新园区
Torch Innovation Precinct at UNSW

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