

MEMS Testing through Bias Superposition

Objectives

There are a range of microsensing systems that typically have an architecture where an electronic stimulus (bias) is injected into a sensor element to enable transduction of a physical stimuli. This signal is then fed into an analogue interface for signal conditioning (filtering, buffering etc) before being buffered or converted into a digital signal. This project investigates the use of this biasing signal to inject test stimuli in the sensor system.

Partners involved

- University of Lancaster, UK
- QinetiQ, UK
- University Paris (IEF), F
- University Montpellier II (LIRMM), F

Summary of results

- Application to wheatstone bridges
- Case studies (Magnetometer, Accelerometer)
- Superposition vs. modulation: a comparative analysis for electro thermal on line MEMS testing
- Design Considerations for On-Line Testing of a Capacitive Accelerometer
- Company visits: ST Microelectronics
- Publications: IEEE IMSTW'2005, VTS'2005, ETS'2005, ...

Offer to industry

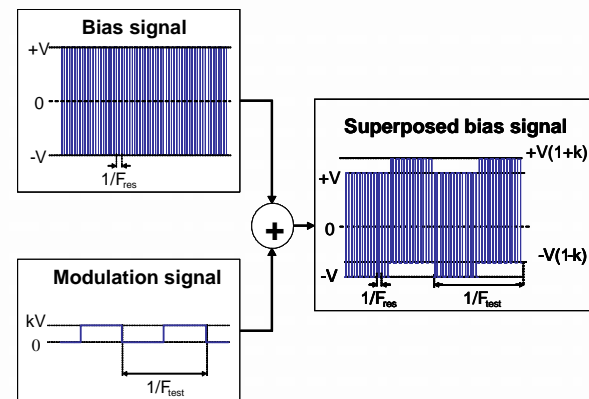
- Consultancy in DfT for MEMS
- Electrical Testing of MEMS

Contact

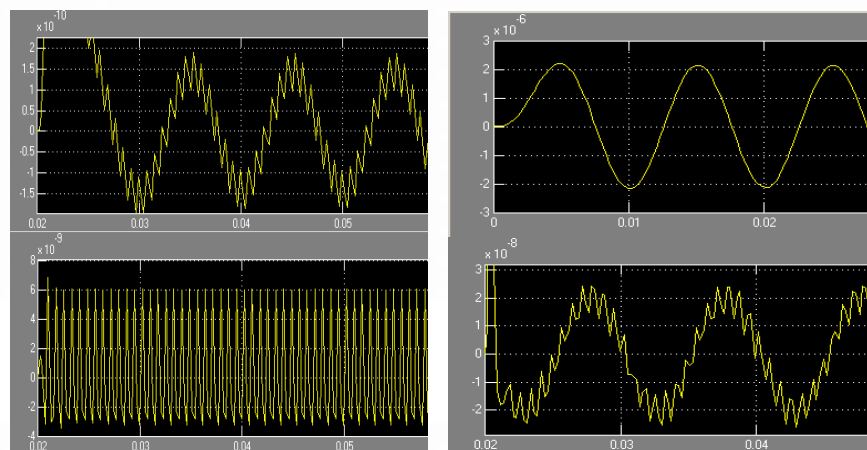
Prof Pascal Nouet (nouet@lirmm.fr)

Project status

Phase 2, Live



Principle of the superposition scheme



Simulated output files from a) acceleration of 1mg at 100Hz with superimposed test signal of 50mg at 1.3kHz; b) acceleration of 15g at 100Hz with superimposed test signal of 50mg at 1.3kHz.