The current status of Vibration measurement standards at AIST/NMIJ

National Institute of Advanced Industrial Science and Technology(AIST)
National Metrology Institute of Japan (NMIJ)

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NMIJ calibration service

Quantity	Instrument or artefact	Measurement conditions	Remarks
Voltage sensitivity	Acceleration measuring chain	0.1 Hz to 10 kHz	4 facilities are employed
Charge sensitivity	Accelerometer	20 Hz to 10 kHz	2 facilities are employed
Shock sensitivity (voltage, modulus)	Acceleration measuring chain	200 m/s^2 to 5000 m/s^2	1 facility is employed

Activities in vibration

- Peer-reviewed (March 2013) and re-accredited (April 2013)
- Development of angular vibration standard (dynamic) and angular velocity standard (static)
- Primary shock acceleration calibration for charge sensitivity including the evaluation of charge amplifier (cooperation work with PTB)
- Extension of calibration service for shock acceleration (peak acceleration range up to 10000 m/s^2, charge sensitivity and voltage sensitivity)
- Evaluation of strain gauge accelerometer employed for shock test in domestic automobile industry

  Consistency check between centrifuge, low shock and vibration acceleration calibrations

Evaluation of strain gauge accelerometer

Crash test on open day at JARI
(Japan Automobile Research Institute)

Strain gauge accelerometers are frequently used for crash test

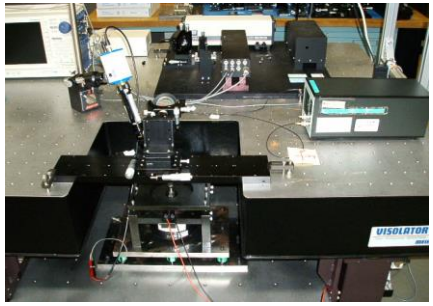
Highly requirement to secure the reliability from domestic automobile industry

- What kind of accelerometer is reliable?
- How should we calibrate such accelerometer?

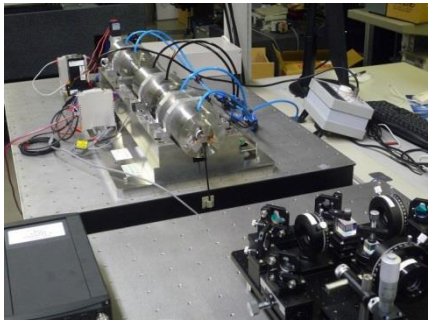
Strain resistive type of accelerometer

Evaluation of stain resistive accelerometer

(Consistency check between different calibration methods)

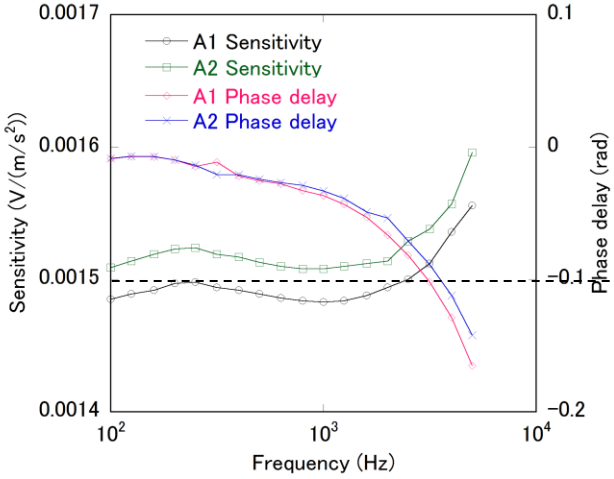


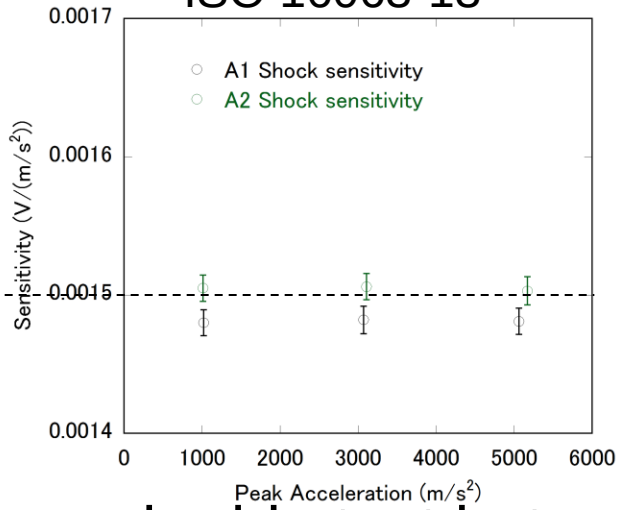
Vibration calibration
ISO 16063-11



Shock calibration
ISO 16063-13

Centrifuge calibration
ISO 5347-7
(on progress of revision)





Now on progress of round robin test between centrifuge and shock calibrations

Thank you for your attention