


## Original Article

# Testing Transverse Sensitivity of Linear Single-Axis Pendulous Accelerometer with Double Turntable Centrifuge

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**Received:** 08 August 2014 / **Accepted:** 04 September 2015 / **Published online:** 25 September 2015

## Abstract

Current ISO standard methods for testing transverse sensitivity of accelerometers are vibration-based. They have difficulties in producing low-frequency vibration for various reasons. This paper introduces a double turntable centrifuge (DTC) to test the accelerometer transverse sensitivity at low frequencies (from 0.01 to 10 Hz). The proposed method can avoid limitations of traditional vibration-based schemes for transverse sensitivity test. In this paper, a theoretical analysis of the method is followed by a presentation of the experimental set-up, and the measurement procedure of a linear single-axis pendulous accelerometer. According to the theoretical analysis and experimental results, it is practicable to test the low-frequency transverse sensitivity with a DTC. The method proposed here can test accelerometer transverse sensitivity at low-frequency with large amplitudes (up to  $700 \text{ m/s}^2$ ), and directly measure the angle of the transverse sensitivity with high resolution. It can be a supplement to the standard methods for testing accelerometer transverse sensitivity at low-frequency.

## Keywords

Accelerometer; Transverse sensitivity; Vibration; Double turntable centrifuge; Low-frequency