

Café Scientifique invité

Bâtiment H10, salle B11

Vendredi 20 septembre 2013 - 13h-14h

Tip-timing method. Theory and applications.

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Monitoring the health of aviation engines requires relevant information about blade vibrations. The main advantage of the blade tip-timing (BTT) method is that it makes full and contactless monitoring of blade vibration possible even when using only one sensor, contrary to strain gauges.

Indeed, the principle is to measure the time of arrival of each blade in front of a sensor and to compare it to the theoretical time of arrival if the blade were rigid, and thus deducing the characteristics of the blade's vibration.

Thus the BTT method can be used to develop a relatively non intrusive and on-line system for monitoring the dynamic performance of the blade in operation. In this conference, theoretical aspects will be presented, illustrated by many examples of measurements and diagnoses performed in industrial context as well as in laboratories.

Key words : structural dynamics, health monitoring, rotating machinery, tip timing method, mode identification