

Multiscale Inverse Analysis Tools for Defect and/or Sources Identification

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ABSTRACT

Different techniques are nowadays available in order to characterize defects in large scale parts such as Flash thermography or acoustic waves. In the first case, the reconstruction of the 2D thermal properties field allows to localize defects such as cracks or heterogeneities in plate like-geometry [1]. The acoustic waves can be directly used to detect heterogeneities (NDT) or coupled with InfraRed thermography. Indeed, acoustic excitation generate thermal heat source at the location of the defect and the corresponding temperature can be measured by using IR thermography [2]. In both cases, the goal is to localize as precisely as possible the defect and / or the source in the 3D part from the transient temperature map measured at the surface of the sample.

This work aims at developping a generic numerical strategy allowing the detection of a defect / source whose size is smaller than the camera resolution (super-resolution) and/or to define its position in the thickness from the transient temperature map measured at the surface of the sample.

REFERENCES

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