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THESIS ABSTRACT

Digital Image Correlation technique in deformation analysis of structures components joints used in aviation.

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Abstract:

This thesis - introduced as a consistent collection of the articles - presents deformation analysis issues of the joints used in aviation. All the deformation analysis were performed using Digital Image Correlation Technique (DIC). The doctoral thesis consists of two parts:

* Part one: DIC technique introduction, synthetic description of measuring system, accuracy analysis, capabilities of the system and introductions to presented articles.
* Part two: Consistent collection of twelve articles related to the thesis, including ISI Master Journal List articles.

As a part of the dissertation an analyses of 4 hybrid joint types were introduced. These joints were tested against dynamic and static loading covering wide range of the temperatures (-45°C to +80°C) and induced to thermal shock too. DIC technique was used for all these analyses. This technique was used for developing a new measuring methods:

* Crack tip tracking method.
* Rapid determination of fatigue life.

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