Flash Thermographic Inspection of Composites

Shining Light on a Hot Topic

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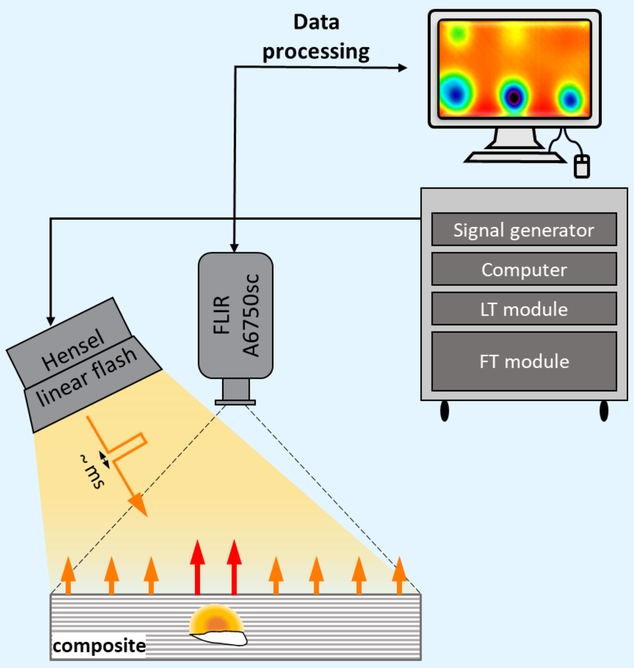
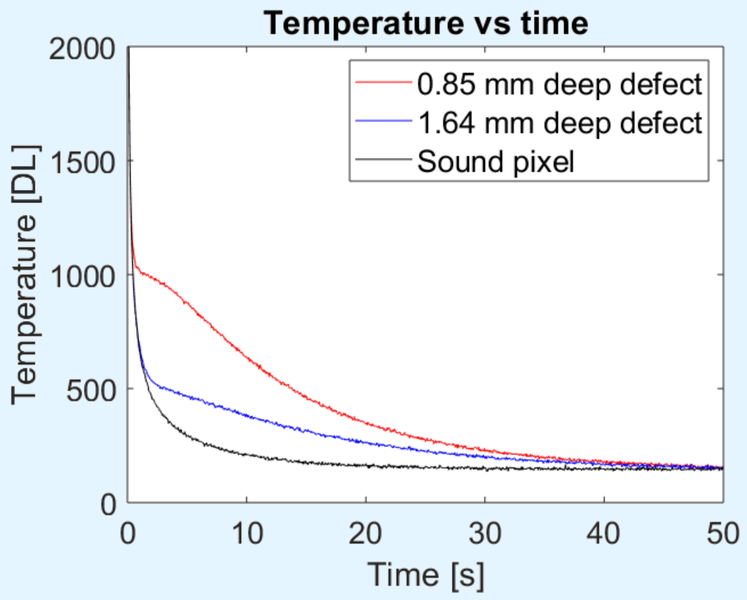
Infrared thermography is a novel and promising technique in the field of **non-destructive testing** (NDT). In optical flash thermography, a short and intense **flash is used to thermally excite** the specimen to be investigated, after which the cooling down regime is captured using a high-end **infrared camera**. The optical excitation causes **thermal waves** to travel through the component's thickness, where local anomalies obstruct their propagation, leading to temperature gradients at the measured surface. The raw temperature data is not always sufficient for defect detection, hence, **advanced data processing approaches** are needed to **maximize the detection probability**.

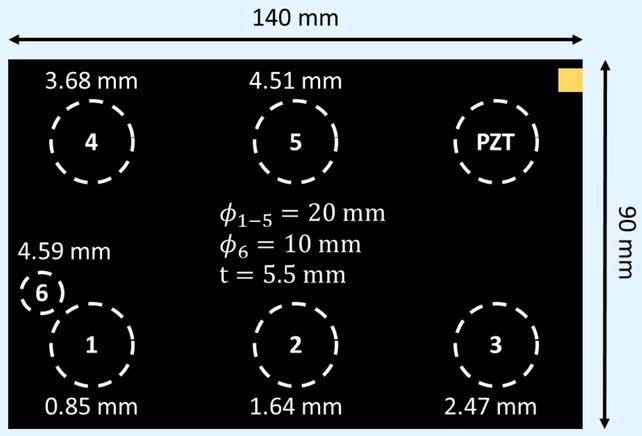
I. Optical Flash Thermography



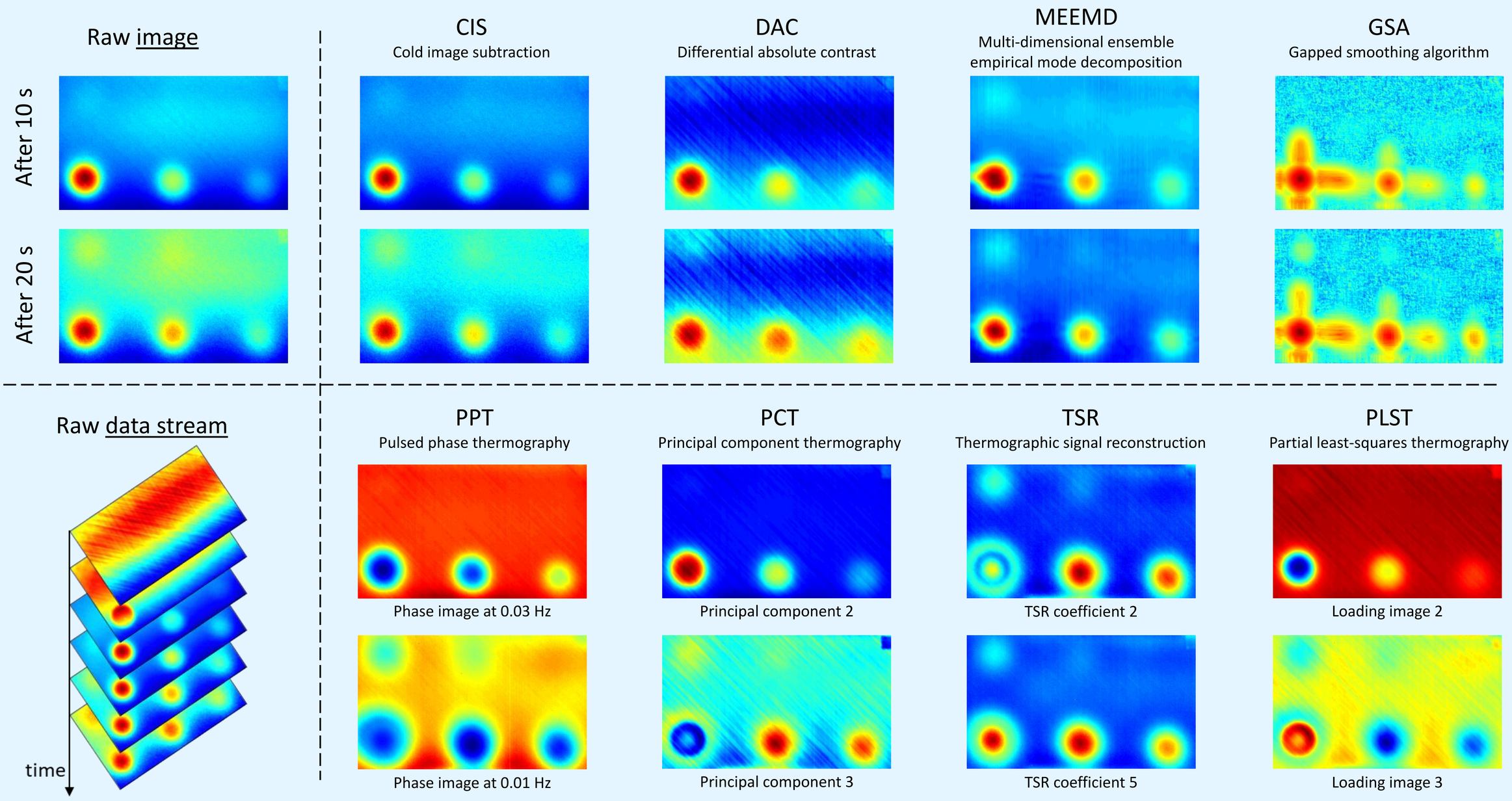


II. Inspected Composite Sample

- Carbon fiber reinforced plastic (CFRP)
- Layup $[+45/0/-45/90]_{3s}$
- Defect type: flat bottom holes (FBH)



III. Results of Optical Flash Thermography and Post-Processing Techniques



IV. Prospects

- **Defects can be detected with optical flash thermography**
- **Intelligent post-processing techniques are indispensable**
- **Combination of different data analysis approaches is optimal**

Acknowledgement

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