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**ABSTRACT**



**PRESENTATION**



**PAPER**



*Mathias Kersemans obtained a PhD in engineering physics from Ghent University on the topic of ultrasonic characterization of composite materials in 2014. He is currently an associate professor in the Mechanics of Materials and Structures research group (UGent-MMS) at Ghent University, where he is leading the research on non-destructive testing and structural health monitoring of advanced light-weight materials. His research team focuses on the development of novel and sensitive (nonlinear) inspection techniques for accurate monitoring and assessing the damage state in complex materials. This includes design of experimental methodology, optimization of excitation and acquisition strategy, advanced signal and image processing, prognostic damage evolution and estimation of remaining useful lifetime. He is author of more than 80 publications in SCI Web of Science.*

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## THERMOGRAPHIC INSPECTION OF WOVEN FABRIC COMPOSITES IN PSEUDO-WAVENUMBER DOMAIN

Thermographic inspection results obtained on woven fabric composites are often dominated by structured thermal noise related to the weave pattern, which makes the detection and sizing of internal defects a challenging task. Classical processing approaches, such as PPT and TSR, show poor performance in removing this structured thermal background.

This study proposes an automated decomposition method in pseudo-wavenumber domain in order to separate the strong structured thermal noise from the useful thermal

signal for defect detection. The proposed processing method significantly improves the defect detectability in thermographic data obtained on woven fabric composites (see below figure). The image of the structured thermal noise is further processed using local Radon transformation in order to obtain knowledge on the fabric structure and fiber angle distribution of the inspected composite. As such, it provides a simple and elegant means to detect and identify the presence of possible fiber wrinkling.