http://dx.doi.org/10.21611/qirt.2015.0062

# Non-Destructive Testing and Evaluation by Thermal Wave Detection and Ranging

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Thermal non-destructive testing and evaluation (TNDT&E) became more popular among the NDT community and gained a significant attention in recent years, mainly because of its remote, whole-field, quantitative imaging capabilities with reasonably high precision and sensitivity for surface and sub-surface defect detection. This paper provides a overview of non-stationary quadratic frequency modulated thermal wave imaging technology. Advantages and limitations of various data processing schemes are presented and the comparisons have been made among them. Typical engineering applications of these technologies are highlighted, with a brief introduction of the history and overview of recent progress on composite material characterization.

Keywords: Frequency modulation, non-stationary signals, non-destructive testing, matched filters, phase images.