**Development and Demonstration of a Digital NDE Pipeline for Streamlined Analysis of Ultrasonic Data**

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ABSTRACT

Currently when nondestructive evaluation (NDE) is performed on composite structures, the results, although recorded digitally are often manually interpreted and indicated (drawn) on the part being inspected by hand. Following this, a determination must be made on how to disposition that part. This decision could be based on engineering guidelines and best practices, rule-of-thumb, expert opinion or finite-element analysis of the part with some approximate representation of the damage. In order to streamline this process for ultrasonic inspection an effort was undertaken as part of NASA Advanced Composites Project to develop the Digital NDE Pipeline. The Digital NDE Pipeline is an integrated tool suite and associated framework that streamlines the inspection and defect disposition process through model-assisted inspection optimization, automated defect analysis of NDE data, and mapping of NDE data into finite element analysis software. This paper will provide an overview of the Digital NDE Pipeline and provide details of the individual tools developed along with the results of applying these tools to a demonstration test case.

**Keywords:** Composites, Ultrasound, Modeling, Automatic Defect Recognition