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**Scott Wilson Badenoch\*** (sbadenoch@badenoch.com), 2 Corporate Drive, Southfield, MI 48076. *Alternative Computational Methods for Optimization of Military Vehicles Design for Human Survivability and other Factors.*

Badenoch LLC designs and develops high performance military vehicles for the United States Department of Defense, and its agencies including DARPA (Defense Advanced Research Projects Agency). The mission of DARPA is not incremental improvement, but game-changing innovation. Examples of DARPA successes are the Internet and stealth technology now used on aircraft and ships. The focus at Badenoch LLC for DARPA is on human survivability, especially in regards to the effects of explosive blast. The process at Badenoch LLC relies upon modeling and simulation (M&S), complimented by extensive blast testing of survivable vehicle technologies. The problem of optimization using M&S is the subject of this AMS presentation. Conventional methods of M&S are computationally accurate, but require long run times even on high performance computers. Badenoch LLC has developed an alternative computational approach, one that offers a significant improvement in computational speed. The improvement in speed allows more factors to be varied, providing a surface plot of the response of the vehicle/human system to blast. For comparison, a conventional M&S calculation requires about forty (40) hours of computer time. The alternative method requires only five (5) seconds. (Received January 16, 2015)