

# Comparison of crash behaviour of initial and updated finite element model of car crash box in crashworthiness analysis

N.A.Z. Abdullah <sup>1</sup>, M.S.M. Sani <sup>1\*</sup>, M.S. Salwani <sup>2</sup>

1 Advanced Structural Integrity & Vibration Research (ASIVR), Faculty of Mechanical Engineering,  
Universiti Malaysia Pahang, 26600 Pekan, Pahang, Malaysia

2 Faculty of Mechanical Engineering, Universiti Malaysia Pahang, 26600 Pekan, Pahang, Malaysia  
[mshahrir@ump.edu.my](mailto:mshahrir@ump.edu.my)

## **Abstract:**

In crashworthiness study, the crash performance of a structure can be assessed through the deformation pattern, the acceleration of the crashing members during and after impact or collision, the energy absorbed and transferred by the crashing members and in some cases, the probability of injury to the vehicle occupants. Among the popular method of analysis the crash performance of a structure is by using dynamic analysis in computational finite element model. In this study, the crash behavior of a finite element model of car crash box is compared to the model that has successfully correlated to its actual structure by using model updating method. The velocity of impactor, the deformation, collapse distance and energy transferred to the two models of crash box are compared. Percentage of discrepancies is calculated and future studies on the topic will be suggested.

**Keywords:** Finite Element; Crashworthiness Analysis; Transferred

## **ACKNOWLEDGMENT**

The authors of this paper would like to acknowledge a great support and encouragement by focus group of Advanced Structural Integrity of Vibration Research (ASIVR), Universiti Malaysia Pahang (UMP) for providing all the equipment used for this work Fundamental Research Grant Scheme (FRGS/1/2017/TK03/UMP/02-19) – RDU 170123