Topic: **Multi-hit Interaction Effects on Thin Metal Sheets**

Speaker: **Dr. Benjamin Russell**
Department of Engineering, University of Cambridge, UK

Date: **11 June 2014, Wednesday**

Time: **10.30am to 12.00pm**

Venue: **EA-06-02** *(map of NUS can be found at http://map.nus.edu.sg/)*

Host: **Prof Victor Shim**

Abstract

Multi-impact of projectiles on thin 304 stainless steel plates is investigated to assess the degradation of ballistic performance, and to characterise the inherent mechanisms. Assessment of ballistic degradation is by means of a double-impact of rigid spheres at the same site on a circular clamped plate. The limiting velocity of the second impact, will be altered by the velocity of the antecedent impact. Finite element analyses were used to elucidate experimental results and understand the underlying mechanisms that give rise to the performance degradation. The effect of strength and ductility on the single and multi-impact performance was also considered. The model captured the experimental results with excellent agreement. Moreover, the material parameters used within the model were exclusively obtained from published works with no fitting or calibration required. An attempt is made to quantify the elevation of the ballistic limit of thin plates by the dynamic mechanism of travelling hinges.

About the Speaker

Dr Benjamin Russell is the Royal Academy of Engineering / Ministry of Defense Research Fellow at the University of Cambridge, where he completed his PhD. His research interests are in the areas of mechanics of materials and structures, impact and energy mitigation, micromechanical phenomena, fabrication of novel materials and structures, and bio-inspired design. He is presently situated in the Micro and nanomechanics group at Northwestern University where he is visiting for 6 months.

Admission is free. All are welcome to attend.