Quantifying errors in image based measurements

Phillip L. Reu
Sandia National Laboratories, USA

Digital image correlation (DIC) is a powerful image-based measurement tool now widely used in experimental mechanics. The combination of ease-of-use, inexpensive equipment, and the power of the technique has led to its widespread adoption. This includes a number of commercial vendors selling turn-key systems down to home-grown university DIC codes. However, as DIC has moved from the university research lab out into national laboratories and industry around the world, it has become increasingly apparent that both training of DIC users and standardization of the methodology are critical. In many ways the progress has been similar to the adoption of FE, with many of the same problems: under-trained users producing questionable results. This presentation will survey the history and development of DIC and its use at Sandia National Laboratory, with a special emphasis on uncertainty quantification and best practices ideas.
Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under contract No. DE-AC04-94AL85000.