

MECHANICAL & INDUSTRIAL COLLOQUIUM

Fall 2011 SEMESTER: ME 794-001

Wednesday, October 12, 2011

1:00-2:25pm

MEC 224

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Recent Developments in Theoretical Kinematic Synthesis: 2001-present

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Abstract

Kinematic synthesis (or quantitative kinematic synthesis to be exact) involves the calculation of the linkage dimensions required to achieve or approximate a series of prescribed linkage output parameters. Improvements in the capabilities of computing hardware, mathematical modeling software and computer aided design codes have and continue to facilitate the development (and application) of methodologies and models in theoretical kinematics.

This presentation provides an overview of distinct advances in theoretical kinematic synthesis since 2001.

These advances include

- Planar and Spatial Adjustable Mechanism Synthesis
- Synthesis given Prescribed FSPs, FSPs with Tolerances and MSPs
- Expanded Precision Position Synthesis
- Motion Generation under Static Structural Conditions
- ISA Synthesis and Applications

Biography

Dr. Kevin Russell is a Senior Mechanical Engineer at the U.S. Army Research, Development and Engineering Center (ARDEC) at Picatinny New Jersey (joining ARDEC in 2001). At ARDEC, Dr. Russell's responsibilities include developing structural-dynamic models for the analysis of weapon system phenomena and providing engineering design and analysis support for the evaluation of existing weapon systems and the development of concept systems. He has been an adjunct instructor in the Department of Mechanical and Industrial Engineering at NJIT since 2004. A 2001 graduate of NJIT and a New Jersey State licensed Professional Engineer, Dr. Russell has 40 technical publications in the areas of mechanical design, kinematics and kinematic synthesis and five weapon system patents/pending patents.

For further information, please contact Dr. A. Narh, MIE Department (narh@njit.edu; 973-596-3333)