

## **MECHANICAL ENGINEERING COLLOQUIUM**

**FALL 2008 SEMESTER: ME 794-001**

**Wednesday, October 15, 2008**

**1:00PM – 2:30PM**

**224 MEC DEPT.**

**Mr. Yahia Al-Smadi  
Senior Mechanical Engineer  
Parsons Corporation**

### **Planar Four-bar Path Generation with Static Structural Conditions**

#### **Abstract**

A planar four-bar path generation model that also includes mechanism static structural conditions is formulated and demonstrated in this work. Using this model, planar four-bar path generators are also synthesized with respect to static torque, deflection constraints and buckling constraints for a given rigid-body load. This kineto-elastostatic analysis is based on the following assumptions considered during the analysis; the crank and the follower are elastic members and the coupler is rigid member, friction in the joints is neglected, link weights are neglected compared to the applied load, the cross sectional properties of a link do not vary, and finally the mechanism is moving in quasi static condition. The numerical example was performed for four-bar mechanism to achieve eight prescribed coupler positions

#### **BIOGRAPHICAL SKETCH**

Mr. Al-Smadi is a senior mechanical engineer in Parsons who is specialized in design and inspection of the machinery systems for the heavy movable structures. Movable structures include movable bridges, movable dams, water navigational locks, bridge maintenance platforms, and heavy movable roofs.

Mr. Al-Smadi earned his bachelor degree in Mechanical engineering from Jordan University of Science and technology 1999 and finished his master degree in manufacturing systems engineering from NJIT 2002. Now, He is a PhD candidate in mechanical engineering at NJIT with areas of interest in machine design, elasto-kinatic mechanism synthesis and flexible/compliant mechanisms.

For More Information Contact: Dr. Joga Rao (973) 596-5601, [raoi@njit.edu](mailto:raoi@njit.edu)