

The Department of Mechanical Engineering
College of Engineering and Applied Sciences at Stony Brook University

**TOPICS IN MECHANICAL ENGINEERING
THE FRANK W. OTTO DISTINGUISHED LECTURE SERIES**

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Friday, November 9, 2018 at 10:00AM, Light Engineering 173



Lecture Title

Kinematic Redundancy in Parallel Mechanisms: A design perspective

Abstract

This presentation will discuss the use of kinematic redundancy in the design of parallel mechanisms. It will be shown that introducing kinematic redundancy in the design of parallel mechanisms can greatly improve kinematic properties such as the rotational workspace, without compromising the kinetostatic behavior. After defining kinematic redundancy and providing some background, two examples of kinematically redundant parallel mechanisms will be presented, namely a 3+1-dof planar parallel mechanism and a 6+3-dof spatial parallel mechanism. The kinematics of these mechanisms will be described in detail and prototypes implementing the proposed concepts will be demonstrated.

Biography

Clément Gosselin received the Ph.D. degree from McGill University in Canada and completed a post-doctoral fellowship at INRIA in France. Since 1989, he has been with the Department of Mechanical Engineering at Université Laval, Québec, Canada where he is a Full Professor since 1997 and holding a Canada Research Chair since 2001. His research interests are kinematics, dynamics and control of robotic mechanical systems with a particular emphasis on the mechanics of grasping, the kinematics and dynamics of parallel manipulators, the development of human-friendly robots and the synthesis of haptic devices. He is an Associate Editor of the IEEE Robotics and Automation Letters and of the ASME Journal of Mechanisms and Robotics. Dr. Gosselin received several awards including the ASME DED Mechanisms and Robotics Committee Award in 2008 and the ASME Machine Design Award in 2013. He was appointed Officer of the Order of Canada in 2010 for contributions to research in parallel mechanisms and underactuated systems. He is a fellow of the ASME, of the IEEE and of the Royal Society of Canada.



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