

报告题目:**Efficient Formulation of the Motion Equations governing the Dynamics of Multibody System**

报告时间:2016年8月31日(周三)14:00~15:30

报告地点:新主楼A306

主办单位:机械工程及自动化学院

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报告摘要:

The equations of motions (EOM) govern the dynamics of a mechanism. Their derivation is hence of vital importance. Moreover, for the simulation and the control of the mechanism it is crucial that these equations can be evaluated in a computationally efficient way. Both topics are addressed in this presentation.

It is well-known that the EOM for rigid body mechanisms can be synthesized from the Newton-Euler equations. This is commonly referred at the Projection Equations or as Kane's equations. In this presentation it will be shown how this can be formalized in terms of the Euler-Poincare equations of a rigid body along with the kinematics of the mechanism described by the joint screw system.

Non-linear model-based control requires the EOM in such a form that allows real-time evaluation. To this end a recursive $O(n)$ formulation for the inverse dynamics for serial mechanisms is reported.

The formulations are extended to closed loop mechanisms.

主讲人介绍:

Andreas Müller was born in Germany. He received the DIPL.-MATH degree in applied mathematics from University of Applied Sciences Mittweida, and the DIPL.-ING. From the University of Applied Sciences Mittweida (FH), Germany, University of Northumbria at Newcastle, UK, and Chemnitz University of Technology, Chemnitz, Germany respectively.

He received one DR.-ING. in mechanism from the Chemnitz University of Technology, Chemnitz, Germany, and another DR.-ING. in habilitation from University Duisburg-Essen

He is a chaired professor with Johannes Kepler University, Linz, Austria, and the Head of its Institute of Robotics. since Oct. 2014. He is the associate professor of the Uni. of Michigan - Shanghai Jiao Tong Uni. Joint Institute, Shanghai, China between Sep. 2013 - Sep. 2014. He is the Guest Editor of the International Journal of Advanced Robotic Systems etc. He is an Associate Editor of the IEEE Transactions of Robotics since 2012 and Mechanism and Machine Theory, etc. He received the Best paper award in REMAR 2015 and 1000 Talent Program Award in Shanghai Municipal Government and Tianjin Municipal Government respectively.