



SEMINAR

APPLIED MATHEMATICS AND MECHANICS

FS946

6 December 2018

A DCAMM seminar No. 734 will be presented by

Professor Xiaoting Rui, PhD
Academician of Chinese Academy of Sciences
Institute of Launch Dynamics,
Nanjing University of Science and Technology, Nanjing, China

The title of the lecture is

Developments in Transfer Matrix Method for Multibody Systems (Rui Method) and Its Applications

Abstract:

The transfer matrix method for multibody systems (MSTMM), namely the Rui method, is a rather novel approach for analyzing multibody system dynamics, which was firstly presented in 1993 and has been constantly developing in recent 25 years. For its features that it avoids the global dynamics equations of the system, keeps high computational speed, and allows highly formalized programming, this method has been widely used in science research as well as design of dynamics performance and experiments for various complex mechanical systems. This method has attracted wide attention and over 300 papers have been published by over 200 researchers from many countries. MSTMM has been widely applied in over fifty research directions in science research and key engineering applications including self-propelled artillery, shipborne gun, "metal storm", anti-aircraft gun, spin tube gun, vehicular MLRS, airborne MLRS, shipborne MLRS, cannon on helicopter, tank, vehicular missile system, fly-cutting machine tool, inertial measurement unit system, launch vehicle, missile, aerospace aircraft, submarine, underwater towed system, piezoelectric actuator, controlled flexible manipulators, intelligent flexible four-bar linkage devices, super long stay cable, earthquake resistant civil structures, immersed tunnel, robots, mobile concrete truck boom, vibration screen, vibration compaction, road roller, wind turbine, wind turbine tower, gas turbine, low pressure rotor of gas turbine, high pressure compressor of gas turbine, large-scale rotary machine, feeding platform, parachute-submissile, rocket projectile, truck cranes, floating bridge, wing, five-axis CNC machine tool, heavy duty machine tool, machine tool spindle, servo turret, high pressure gas well, diesel engine, roots blower with double rotor, ship's anti-vibration mounting system, ship pipeline, bearing-rotor, vehicle suspension, etc. In this report, the following aspects are systematically reviewed: history, basic principles, formulas, algorithm, automatic deduction theorem of overall transfer equation, visualized simulation and design software, comparison with other dynamics methods, highlights, tendency, and applications.

DATE:	Thursday, 20 December 2018
TIME:	11:00 – 11:45 + questions
PLACE:	Room 00.117 (NAVITAS building), Aarhus University, Inge Lehmanns Gade 10, 8000 Aarhus C

Danish pastry, coffee and tea will be served 15 minutes before the seminar starts.

All interested persons are invited.

Niels Leergaard Pedersen

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