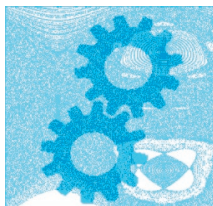


4th International Symposium



Investigations of Non-Linear Dynamic Effects in Production Systems

Conference Program

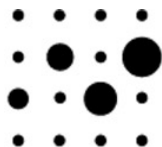
April 8-9, 2003
Chemnitz, Germany



CHEMNITZ UNIVERSITY
OF TECHNOLOGY



Fraunhofer
Institut
Werkzeugmaschinen
und Umformtechnik



Volkswagen **Stiftung**

Organization

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Chair of Complex Systems and Nonlinear Dynamics
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Tuesday, April 8, 2003

- 8.00 Registration
- 8.30 **Welcome and Introduction**
Prof. R. Neugebauer
Chemnitz University of Technology and Fraunhofer IWU
- 8.40 **Greeting words**
Prof. D. Happel; Chemnitz University of Technology
- 8.50 **Greeting words**
Dr. I. Willms-Hoff; VolkswagenStiftung

Plenary Session

- 9.00 **Method of Stabilization of a Target Regime**
L. Bunimovich
Georgia Institute of Technology, Atlanta, USA
- 9.30 **Nonlinear Dynamics of High-Speed Milling Subject to Regenerative Effect**
G. Stépán, R. Szalai, T. Insperger
Budapest University of Technology and Economics, Hungary
- 10.00 Coffee Break
- 10.30 **Real-Time Monitoring of Dynamical State Changes in Staged Coal Combustion**
S. C. Daw; *Oak Ridge National Laboratory, Tennessee, USA*
- 11.00 **Coordination of Mechanical Systems**
H. Nijmeijer, A. Rodriguez-Angeles
Eindhoven University of Technology, The Netherlands
- 11.30 **Nonlinear Dynamics Based Monitoring of Manufacturing Processes**
E. Govekar¹, **J. Gradišek**¹, **I. Grabec**¹, **A. Baus**², **F. Klocke**²,
M. Geisel³, **M. Geiger**³
1 University of Ljubljana, Slovenia; 2 RWTH Aachen, Germany
3 University of Erlangen-Nuremberg, Germany
- 12.00 Lunch

Tuesday, April 8, 2003

Session A

- 13.30 **Modelling of High-Speed Milling for the Prediction of Regenerative Chatter**
N. van de Wouw¹, R. P. H. Faassen¹, J.A.J. Oosterling²,
H. Nijmeijer¹
1 Eindhoven University of Technology, The Netherlands
2 TNO Institute of Industrial Technology, The Netherlands
- 14.00 **Nonlinear Dynamics of an External Cylindrical Grinding System and a Strategy for Chatter Compensation**
H. K. Tönshoff¹, B. Denkena¹, J. Jacobsen¹, B. Heimann¹,
O. Schütte¹, K. Grudzinski², A. Bodnar²
1 University of Hannover, Germany
2 Technical University of Szczecin, Poland
- 14.30 **Wrinkling in Sheet Metal Spinning**
M. Kleiner¹, R. Göbel¹, C. Klimmek¹, B. Heller¹,
V. Reitmann², H. Kantz²
1 University of Dortmund, Germany
2 MPI for Physics of Complex Systems, Dresden, Germany
- 15.00 Coffee Break
- 15.30 **Investigation of Non-Linear Dynamic Effects in Loaded Layer-Substrate-Systems through Molecular Dynamics Simulation**
R. Rentsch, E. Brinksmeier, J. Li; *University of Bremen, Germany*
- 16.00 **Problems Arising in Finite Element Simulations of the Chip Formation Process under High-Speed-Cutting Conditions**
A. Behrens, K. Kalisch, B. Westhoff, J. Wulfsberg
University of the Federal Armed Forces Hamburg, Germany
- 16.30 **Simulation of Nonlinear Dynamical Effects in Coating-Substrate-Systems**
G. Schmidt, R. Leopold, R. Neugebauer; *Fraunhofer IWU, Germany*
- 17.00 **Round Table / Discussion**
- 18.30 Departure for the Evening Event

Tuesday, April 8, 2003

Session B

- 13.30 **Modelling and Simulation of Process Monitoring and Control in Laser Cutting**
V. Kostrykin¹, W. Schulz¹, M. Nießen², J. Michel²
1 Fraunhofer ILT Aachen, Germany; 2 RWTH Aachen, Germany
- 14.00 **Approximate Model for Laser Welding**
J. Michel¹, S. Pfeiffer¹, W. Schulz², M. Nießen¹, V. Kostrykin²
1 RWTH Aachen, Germany; 2 Fraunhofer ILT Aachen, Germany
- 14.30 **Dynamics of the Laser Drilling Process**
V. Kostrykin¹, W. Schulz¹, M. Nießen², J. Michel²
1 Fraunhofer ILT Aachen, Germany; 2 RWTH Aachen, Germany
- 15.00 Coffee Break
- 15.30 **An Approach to a Process Model of Laser Beam Melt Ablation Using Methods of Linear and Nonlinear Data Analysis**
R. Donner¹, A. Cser², U. Schwarz¹, A. Otto², U. Feudel³
2 University of Potsdam, Germany
1 University Erlangen-Nuremberg, Germany
3 University of Oldenburg, Germany
- 16.00 **Nonlinear Dynamics and Control of Ripple Formation in Abrasive Waterjet Cutting**
G. Radons¹, T. Ditzinger², R. Friedrich³, A. Henning⁴,
A. Kouzmichev³, E. Westkämper⁴
1 Chemnitz University of Technology, Germany; 2 Springer-Verlag,
3 University of Muenster, Germany; 4 University of Stuttgart, Germany;
- 16.30 **Vibrations Induced During a Stability Loss of Periodic Manipulator**
P. Szuminski, T. Kapitaniak
Technical University of Lodz, Poland
- 17.00 **Round Table / Discussion**
- 18.30 Departure for the Evening Event

Wednesday, April 9, 2003

Session A

- 8.30 **Non-Linear Dynamics in Chemical Engineering and Electrochemical Manufacturing Technologies**
P. J. Plath
University of Bremen, Germany
- 9.00 **Chemical Turbulence in Lead Acid Batteries**
U. Sydow¹, M. Buhler¹, E. C. Hass¹, P. J. Plath²
1 MIR-Chem GmbH, Bremen, Germany
2 University of Bremen, Germany
- 9.30 **Nonlinear Dynamics in Chemical Process Design**
M. Mönnigmann, J. Hahn, W. Marquardt
RWTH Aachen, Germany
- 10.00 Coffee Break
- 10.30 **Galvanostatic Studies of an Oxygen-Evolving Electrode**
C. Gerlach, A. Visser, P. J. Plath
University of Bremen, Germany
- 11.00 **Wavelet Analysis of Etched and Electropolished Surfaces**
A. Mora¹, C. Gerlach², T. Rabbow², P. J. Plath², M. Haase¹
1 University of Stuttgart, Germany
2 University of Bremen, Germany
- 11.30 **Nonlinear Models for Control of Manufacturing Systems**
E. Lefeber
Eindhoven University of Technology, The Netherlands
- 12.00 Lunch

Session B

- 8.30 **Simulation, Experimental Investigation and Control of Thermal Behavior in Modular Tool Systems**
J. Konvicka¹, J. Kurths², S. Nestmann¹, R. Neugebauer¹,
U. Schwarz², F. Weidemann¹, A. Wessel², N. Wessel²
1 Fraunhofer IWU, Chemnitz, Germany
2 University of Potsdam, Germany
- 9.00 **Nonlinear Vibrations During the Pass in a Steckel Mill Strip Coiling Process**
H. J. Holl¹, G. Finstermann², K. Mayrhofer², H. Irschik¹
1 Johannes-Kepler-University of Linz, Austria
2 VOEST ALPINE Industrieranlagenbau GmbH, Austria
- 9.30 **Influence of the Workpiece Profile on the Self-Excited Vibrations During Metal Turning Process**
R. Rusinek, K. Szabelski, J. Warminski
Technical University of Lublin, Poland
- 10.00 Coffee Break
- 10.30 **Measurement and Identification of Presliding Friction Dynamics**
F. Al-Bender¹, D. Engster⁴, S. D. Fassois², A. Hornstein⁴,
V. Lampaert¹, U. Parlitz⁴, D. D. Rizos², K. Worden³
1 Catholic University of Leuven, Belgium
2 University of Patras, Greece
3 University of Sheffield, UK
4 University of Goettingen, Germany
- 11.00 **Presliding Friction Identification Based upon the Maxwell Slip Model Structure**
D. D. Rizos, S. D. Fassois; *University of Patras, Greece*
- 11.30 **Nonlinear Vibration in Gear Systems**
G. Litak¹, M. I. Friswell²
1 Technical University of Lublin, Poland
2 University of Bristol, UK
- 12.00 Lunch

Wednesday, April 9, 2003

Session A

- 13.30 **Dynamical Systems and Production Systems**
D. Armbruster; *Arizona State University, USA*
- 14.00 **Manufacturing Systems with Restricted Buffer Sizes**
K. Peters¹, J. Worbs², U. Parlitz¹, H.-P. Wiendahl²
1 University of Goettingen, Germany
2 University of Hannover, Germany
- 14.30 **How Chip Manufacturers Can Learn from Pedestrians**
D. Helbing; *Dresden University of Technology, Germany*
- 15.00 Coffee Break
- 15.30 **Modelling and Analysis of a Re-entrant Manufacturing System**
B. Scholz-Reiter¹, M. Freitag¹, A. Schmieder¹, A. Pikovsky²,
I. Katzorke²
1 University of Bremen, Germany; 2 University of Potsdam, Germany
- 16.00 **Harnessing Nonlinear Interactions in Mechanical Engineering Systems**
M. Wiercigroch; *University of Aberdeen, UK*
- 16.30 **Summary / Closing Speeches**

Session B

- 13.30 **New Type of Piercing Machine**
F. Peterka; *Academy of Sciences of the Czech Republic*
- 14.00 **Engineering Approach to the Soft Impacts Oscillator**
L. Kocanda; *Academy of Sciences of the Czech Republic*
- 14.30 **System Behavior and Stability of Radially Coupled Rolls**
J. Weiß; *Fraunhofer IWU, Chemnitz, Germany*
- 15.00 Coffee Break
- 16.30 **Summary / Closing Speeches**