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Lihua Liang, Yinling Jiang, Peng Zhao

[Neural Network-based Adaptive Sliding Mode Control for Gyroelastic Body](#) 1943

Shiyuan Jia, Jinjun Shan

[Modeling and Simulation of Wire-wound Friction of Compact Inertially Stabilized Platforms](#) 1949

Yutang Wang, Dapeng Tian, Ming Dai, Honghai Shen, Ping Jia

[Research on On-line Testing System of Flow Characteristics for Vehicle Electronic Fuel Injector](#) 1955

Yanhao Li, Bin Liu, Jianwen Li, Yan Zhao, Wei Lei

[Dynamic Analysis on Rotor System Supported by Active Magnetic Bearings based on Sliding Mode Control](#) 1960

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[Research on UAV Simulation Training System Based on Visual Simulation](#) 1972

Tingting Wang, Bing Bai, Yifang Yuan, Yongwei Zhu

[Longitudinal Flight Quality Analysis of Small Diamond Wing Configuration UAV](#) 1978

Ruijie Sun, Zhou Zhou, Xiaoping Zhu, Rui Wang, An Guo

[Modelling and Control of a Novel Hydraulic Hybrid Vehicle with Wheel Motors](#) 1985

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[Study on Vibration and Crack Propagation Control of Cracked Asymmetric Rotor Based on Three-Dimensional Finite Element Model](#) 1991

Rong Hu, Jun Liu, Jianen Chen, Xiaofeng Wang, Weimin Ge

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