Theme	**Model-based control for distributed mechatronic systems (MT2)**
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Key Words	Distributed mechatronic system, predictive control, modeling, mathematical-physical analysis
Specification	Industrial production is more and more realized with increasing number of productive components generally mechanical, electromechanical, electrical or electronic ones. The components form usually one technological set. It can be manipulation, machining, quality checking, packing, etc. operations, in which the components represent individual or cooperative distributed system. For mentioned components above, the system is called mechatronic system. Such system can be controlled on different levels form simple manual and fixed control, via logical feedback control up to high-level continual feedback control. The issue is usually managing of several motor units (drives) to be worked in common time schedule. The aim of the theme is a design and technical documentation of model-based control of several independent model motor units.
Tasks	1. Study and select suitable feedback control for distributed mechatronic system. 2. Compose mathematical description of individual model motor unit. 3. Apply or implement selected model-based control in programmable environment MATLAB-Simulink.
Literature	1. Saleem, A.: Mechatronics System Design, Controller and control algorithm Selection, Philadelphia University, 2010. 2. Maciejowski, J., M.: Predictive Control with Constrains, Prentice Hall, London 2002. 3. Online Manuals: Using MATLAB, Simulink; The MathWorks, Inc. http://www.mathworks.com/. 4. Other full-text sources: http://as.utia.cas.cz/asc - Link to GPC pages.
Note	Theme for master's thesis.