**"Gyroskopiya i Navigatsiya" №2, 2005**

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| The land navigation systems state and prospects of their development and application are analyzed for all types of movable land vehicles. Modern traditionally used navigation systems (for marine air and space vehicles) usually represent inertial navigation complexes augmented with satellite data receivers, inertial sensors and computers providing realization of algorithms processing all available measurements thus aiming to obtain the most precise navigation parameters for the available composition of the equipment. It is also true for the land navigation systems, except the following specific features: Prevailing for today role of the satellite navigation systems, large-scale application and use of digital high accuracy chart data, integration of navigation and communication aids including the Internet, necessity of guarantee for solving the indoor navigation problem. The marked features are of peculiar interest for the consist, car, agricultural vehicle, pedestrian and indoor moving object application. |  |

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| If the desirable operational mode of some object is unstable, the most important control problem is to stabilize this desirable mode. There are some difficulties to solve the problem of synthesis of feedback control to stabilize the necessary mode. The resources of control system are usually limited, therefore unstable object can be removed to the necessary operational mode not from any state. In other words, there is some set of states, from which one the system with limited resources of control can reach a desirable mode. This set takes a part of the phase space. It is accepted to call this set as area of controllability. The basin of attraction of desirable operational mode with concrete control feedback belongs to area of controllability. Here basin of attraction as usually calls set of initial states, from which one the system with feedback control asymptotically tends to a desirable mode. If the basin of attraction is too small, the desirable mode practically can not be realized. The basin of attraction can be small in two cases: or the resources of control are poor, or the control law is designed not by the best way. Thus, there is a problem of a maximization of basin of attraction. Let's mark, that this problem is key at designing of not contact gyros. In the present article, the indicated problem is considered on examples of control of an inverted one-link pendulum with flywheel or with dumb-bell, of control of single-wheel vehicle (monocycle). The stabilization of mechanical systems, as is known, can be carried out through gyroscopic forces. As examples of gyroscopic stabilization of unstable controlled mechanical systems here are considered single-wheel robot with unperturbed gyrostabilized platform and bicycle with gyrostabilizer. Both are designed in Institute of Mechanics of Moscow Lomonosov State University. |  |

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| **D. P. Loukianov, A. A. Tikhonov, Yu.V. Filatov, A.G. Povalyaev, S. Yu. Shevchenko, I V. Popova, A.M. Lestev, M.A. Lestev, V.V. Novikov, M.S. Vershinin** | **The Development and Optimization of a SAW-Microaccelerometer structure. Part I** | **79** |
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