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(These summaries may be reproduced)

VÁCLAV DOLEŽAL, Praha: *A remark on energetic stability of feedback systems.* Apl. mat. 14 (1969), 345—354. (Original paper.)

The paper develops further the idea of energetic stability of dynamical systems introduced by J. Kudrewicz; three theorems on stability of feedback systems are given.

ALEXANDER ŽENÍŠEK, Brno: *Konvergence metody konečných prvků pro okrajové problémy systému eliptických rovnic.* (The convergence of the finite element method for boundary value problems of the system of elliptic equations.) Apl. mat. 14 (1969), 355—377. (Original paper.)

The finite element method is a generalized Ritz method using special admissible functions. In the paper, triangular elements and functions are considered which are linear or quadratic polynomials on each triangle. The convergence is proved for variational problems arising from second order boundary value problems. The order of accuracy of the procedure is $(s + 1)/2$ in case of inhomogeneous Dirichlet conditions and s in other cases (s is the degree of the polynomial used).

KAREL MIŠOŇ, Praha: *To the interpretation of the osculations of orbits and the in-space launching point of artificial cosmic bodies.* Apl. mat. 14 (1969), 378—386. (Original paper.)

The case of transferring the rocket from the prescribed path of departure to the transfer orbit osculating another given complanar rocket trajectory of arrival is studied. The introducing to the transfer orbit is realized only by a change of the modulus of velocity of the rocket without changing the flight direction. The requirement of osculating the two conic sections leads to a solution of an algebraic-trigonometric system which is numerically labourious. The prescription of the position of the apsidal line of the transfer orbit is a simplification which makes possible an explicit expression of the polar angles of the osculating points. The starting velocity is expressed and related to any arbitrary point of the original path by the assignement of the real solution. The purely geometrical approach to the problem is made as well, without kinematic attitude. The conclusion investigates a cosmical rendez-vous, i.e. the case when a rocket flying along the transfer path finds the rocket moving along the trajectory of arrival.

IVAN HLAVÁČEK, MIROSLAV HLAVÁČEK, Praha: *On the existence and uniqueness of solution and some variational principles in linear theories of elasticity with couple-stresses.* Part I: *Cosserat continuum.* Apl. mat. 14 (1969), 387—410. (Original paper.)

A weak (generalized) solution to the boundary-value problems in Cosserat continuum is defined. Its existence, uniqueness and continuous dependence upon the given data is proved for the statical loading of bounded, inhomogeneous and anisotropic bodies. Principles of minimum potential energy, of minimum complementary energy and some generalized variational principles are established.

IVAN HLAVÁČEK, MIROSLAV HLAVÁČEK, Praha: *On the existence and uniqueness of solution and some variational principles in linear theories of elasticity with couple-stresses.* Part II: *Mindlin's elasticity with microstructure and the first strain-gradient theory.* Apl. mat. 14 (1969), 411—427. (Original paper.)

A weak solution to the boundary-value problems both in the Mindlin's theory of elasticity with microstructure and in the first strain-gradient theory is defined for the statical loading of bounded, inhomogeneous and anisotropic bodies. Its existence, uniqueness and continuous dependence upon the given data is proved and the principles of minimum potential energy and minimum complementary energy are established.