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Abstract

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Seminar-Symposium on the Topic "Lyapunov' s Second Method and Its Application in Power Engineering"

From June 9 to 12, 1965, in Novosibirsk, at the Siberian Scientific Research Institute of Power Engineering (SibNIIE), an All-Union seminar-symposium was held on the application of Lyapunov' s second method in power engineering. Representatives of 32 scientific research institutes and educational institutions from 17 cities of the Soviet Union took part in the seminar.

Abstracts of the reports and communications, together with questions for discussion, were printed in advance and sent to all interested organizations and to many specialists (mathematicians, power engineers).

We give a list of the reports heard at the seminar-symposium.

S. I. Gorshin (Kazakh Polytechnic Institute, Alma-Ata). Lyapunov' s second method as applied to stability under constantly acting disturbances.

S. K. Persidskii (Kazakh State University, Alma-Ata). Some questions of Lyapunov' s second method.

M. K. Yakovlev (Pedagogical Institute, Novosibirsk). On the theory of Lyapunov' s second method.

I. V. Livartovskii (Moscow Institute of Physics and Technology, Moscow Region, Dolgoprudnyi). Lyapunov' s second method for discontinuous systems.

E. I. Gerashchenko, S. T. Zavalishin (Sverdlovsk Branch of the Mathematical Institute of the Academy of Sciences of the USSR, Sverdlovsk). Construction of discontinuous Lyapunov functions for relay systems.

V. Ya. Turin (Moscow Electrotechnical Institute of Communications, Moscow). Use of Lyapunov's second method in the study of the stability of self-oscillations of systems with discontinuous characteristics.

Yu. A. Dmitriev (Siberian Scientific Research Institute of Power Engineering, Novosibirsk). Absolute stability and dissipativity of impulse systems with one nonlinear block.

A. Kh. Gelig (Computing Center of Leningrad State University, Leningrad). Investigation of the absolute stability of certain turbine control systems with insensitivity by means of Lyapunov functions.

I. I. Akhmetgaleev (Kazan Aviation Institute, Kazan). Absolute stability of two-channel control systems.

G. V. Aronovich (Gorky). Conditions for the occurrence of damped motions from an equilibrium state of the complex-focus type.

V. V. Leonov (Institute of Mathematics, Siberian Branch of the Academy of Sciences of the USSR, Novosibirsk). Asymptotic programming and synthesis of stable systems.

V. A. Venikov, I. V. Litkens, V. P. Vasin, M. V. Machinskii (Moscow Power Engineering Institute, Moscow). On the development of methods for analyzing the stability of power systems.

S. V. Strakhov (Moscow Institute of Railway Engineers, Moscow). Some considerations on the possibilities of applying Lyapunov methods to the solution of problems in the dynamics of electric-power systems.

M. G. Portnoi (All-Union Scientific Research Institute of Electric Power Engineering, Moscow). Application of the energy method for analyzing the stability of a synchronous machine under periodic disturbances.

T. B. Zaslavskaya, M. A. Tagirov (Siberian Scientific Research Institute of Power Engineering, Novosibirsk). Application of Lyapunov functions to the investigation of the stability of electrical systems under finite disturbances.

A. T. Putinov (Siberian Scientific Research Institute of Power Engineering, Novosibirsk). Calculation of the synchronous dynamic stability using Lyapunov functions.

D. A. Arzamastsev, M. P. Rudnitskii (Ural Polytechnic Institute, Sverdlovsk). Application of Lyapunov' s second method to the analysis of electromechanical transient processes connected with the determination of limiting transitions in multimachine systems.

M. A. Tagirov (Siberian Scientific Research Institute of Power Engineering, Novosibirsk). Critical cases according to Lyapunov in the theory of stability of electrical systems.

D. A. Arzamastsev, M. P. Rudnitskii (Ural Polytechnic Institute, Sverdlovsk). Some questions of practical-

of the use of Lyapunov' s second method for studying the dynamic stability of multimachine systems.

Yu. A. Dmitriev (Siberian Scientific Research Institute of Power Engineering, Novosibirsk). On the application of the method of absolute stability for constructing invariant regions of asymptotic stability.

N. A. Kartvelishvili (All-Union Scientific Research Institute of Electric Power Engineering, Moscow). Problems of stability of power systems as problems of the general theory of stability.

L. V. Tsukernik (Institute of Electrodynamics, Academy of Sciences of the Ukrainian SSR, Kiev). On the application of Lyapunov' s second method in

the analysis of the stability of electric-power systems.

In the course of the seminar-symposium, individual reports were discussed and a general discussion developed on the prospects for applying Lyapunov' s second method in power engineering.

The seminar-symposium showed that the joint consideration of questions of the stability of electric-power systems by specialists—mathematicians and power engineers—is expedient. A wish was expressed that contacts with mathematicians be maintained in the future.

For the successful application of Lyapunov' s methods in the theory of stability of electric-power systems, it is necessary, on the one hand, to continue work on a rigorous mathematical formulation of the stability problem for these systems, one that would reflect their specific features; on the other hand, to intensify the development of regular techniques for constructing Lyapunov functions based on the concrete mathematical features of electric-power systems.

For the participants of the seminar-symposium, excursions were organized to Akademgorodok (Computing Center of the Siberian Branch of the Academy of Sciences of the USSR) and to the Novosibirsk Hydroelectric Power Station.

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Note: Figure translations are in progress. See original paper for figures.