Nikolai Pavlovich Erugin (on the occasion of his 60th birthday)

Authors:

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Abstract

Full Text

Preamble: Nikolai Pavlovich Erugin

May 14, 1967, marked the 60th anniversary of the birth of the renowned Soviet mathematician, Academician of the Academy of Sciences of the BSSR, Nikolai Pavlovich Erugin. For over 35 years, Nikolai Pavlovich has conducted extensive research and pedagogical work. His career began in Leningrad, where he served as the Head of the Department of Differential Equations, Dean of the Faculty of Mathematics and Mechanics at Leningrad University, and Director of the Leningrad Branch of the V. A. Steklov Mathematical Institute. In 1956, following his election as an Academician of the BSSR, he moved to Minsk.

The Great Patriotic War interrupted N. P. Erugin's intensive scientific activities. In September 1941, he volunteered for the front and fought in the defense of Leningrad, for which he was awarded military orders and medals. On February 22, 1942, he was severely wounded. Despite being in a grave condition, he returned to the Elabuga branch of Leningrad University in September 1942. By November 1942, he completed a major work on the construction of the theory of reducible systems, for which he was awarded the degree of Doctor of Sciences in 1943.

N. P. Erugin has authored numerous scientific works, including four monographs, covering the fundamental branches of the theory of ordinary differential equations: the analytical theory of linear and nonlinear systems, qualitative theory, stability theory, and general theory. He has also produced original research on partial differential equations, the numerical integration of differential equations, and various related disciplines with applications in the field. In 1951, he was awarded the State Prize for his contributions to stability theory and the qualitative theory of differential equations.

Throughout his career, Nikolai Pavlovich has balanced his scientific and pedagogical efforts with significant administrative and organizational responsibilities. He has supervised more than 30 Candidates of Sciences and 6 Doctors of Physical-Mathematical Sciences. Currently, he heads the Institute of Mathematics of the Academy of Sciences of the BSSR and serves as the Editor-in-Chief of the journal *Differential Equations* (*Differentsial' nye Uravneniya*).

In May 1967, by decree of the Presidium of the Supreme Soviet of the USSR, Academician Nikolai Pavlovich Erugin was awarded the Order of the Red Banner of Labour in recognition of his services to science and education and on the occasion of his 60th birthday. Furthermore, by decree of the Presidium of the Supreme Soviet of the BSSR, he was granted the honorary title of Honored Scientist of the Belorussian SSR for his contributions to the development of science and the training of academic personnel.

E. A. Barbashin, Yu. S. Bogdanov, A. I. Yablonsky

List of Published Works by N. P. Erugin

1935–1946 1. Sur la substitution exposante pour quelques systèmes irréguliers. *Matematicheskii Sbornik*, 42:6. 2. The exponential substitution of an irregular system of linear differential equations. *Doklady Akademii Nauk SSSR*. 3. On the exponential substitution of a system of linear differential equations (Poincaré' s problem). *Matematicheskii Sbornik*, (45). 4. On the Riemann problem for the Gauss system. *Uchenye Zapiski Leningradskogo Instituta*. 5. A remark on the article by L. M. Shifner. *Izvestiya Akademii Nauk SSSR, Seriya Matematicheskaya*. 6. On functionally invariant solutions. *Doklady Akademii Nauk SSSR*, 42:9. 7. Reducible systems. *Nauchnyi Byulleten' LGU*, 1946. 8. *Reducible Systems* (Monograph). *Trudy Matematicheskogo Instituta im. V. A. Steklova*.

1948–1950 9. On the asymptotic stability of the solution of a certain system of differential equations. *Prikladnaya Matematika i Mekhanika* (PMM), 12:2. 10. Generalization of a theorem by Lyapunov. *PMM*, 12:5, 633–638. 11. On functionally invariant solutions. *Uchenye Zapiski LGU*, No. 96, Mathematics Series, Issue 15. 12. Functionally invariant solutions of second-order equations with two independent variables. *Uchenye Zapiski LGU*, No. 111, Mathematics Series, Issue 16. 13. Approximate integration of certain oscillating functions. *PMM*, 14:2, 193–196 (with S. L. Sobolev). 14. Closed solution of a parabolic boundary value non-homogeneous problem. *PMM*, 14:2. 15. A remark on the integration of a system of two equations in closed form. *PMM*, 14:3. 16. On certain questions of the stability of motion and the qualitative theory of differential equations in the large. *PMM*, 14:5.

1951–1954 17. Qualitative investigation of the integral curves of a system of differential equations. *PMM*, 14:6, 659–664. 18. On the continuation of solutions of differential equations. *PMM*, 15:1, 55–58. 19. Some general questions in the

theory of stability of motion. *PMM*, 15:2, 227–236. 20. On the theory of differential equations (ordinary and partial). *PMM*, 15:3, 355–366. 21. Theorems on instability. *PMM*, 16:3. 22. Analytical theory of nonlinear systems of ordinary differential equations. *PMM*, 16:4, 465–486. 23. On a problem in the theory of stability of automatic control systems. *PMM*, 16:5, 620–628. 24. Construction of the set of all systems of differential equations having a given integral curve. *PMM*, 16:6, 659–670. 25. Review of the work of Soviet mathematicians on the theory of stability of motion. In: *A. M. Lyapunov, Bibliography*, compiled by A. M. Lukomskaya, edited by Acad. V. I. Smirnov. Moscow–Leningrad, USSR Academy of Sciences, 89–96. 26. Lyapunov' s methods and questions of stability of motion in the large (Report at the Leningrad City Mathematical Seminar). *PMM*, 17:4, 389–400. 27. Review of the book by I. G. Malkin, "Theory of Stability of Motion." *Vestnik LGU*, No. 5, 123–127. 28. Aleksandr Mikhailovich Lyapunov. *Bolshaya Sovetskaya Entsiklopediya* (BSE), 25, 586–587. 29. Methods for solving stability problems in the large. *Proceedings of the 2nd All-Union Conference on the Theory of Automatic Regulation*, Vol. 1. Moscow–Leningrad, USSR Academy of Sciences.

1955–1958 30. On the theory of implicit functions (Report at the Leningrad City Mathematical Seminar). *Uspekhi Matematicheskikh Nauk* (UMN), Vol. X, Issue 4, 198–200. 31. Some general problems of the qualitative and analytical theory of linear systems of differential equations. *PMM*, 19:2. 32. Qualitative methods in stability theory. *PMM*, 19:5, 599–616. 33. Remark on the work of N. P. Erugin "On the continuability of solutions of differential equations" (*PMM*, 15:1, 1951). *PMM*, 19:6, 764. 34. *Implicit Functions* (Monograph). Leningrad State University Publishing House. 35. *The Lappo-Danilevsky Method in the Theory of Linear Differential Equations* (Monograph). Leningrad State University Publishing House. 36. On the analytical theory of nonlinear differential equations. *Vestnik LGU*, No. 7, 60–70. 37. On periodic solutions of differential equations. *PMM*, 20:1, 148–152. 38. Analytical theory of nonlinear systems of ordinary differential equations. *Trudy Instituta Fiziki i Matematiki AN BSSR*, Issue 2, 235–248. 39. On the theory of the first Painlevé equation. *Doklady Akademii Nauk BSSR*, 2, No. 1, 3–6. 40. On the second transcendental Painlevé equation. *Doklady Akademii Nauk BSSR*, 2, No. 4, 139–142. 41. On the integrals of systems of ordinary differential equations. *Doklady Akademii Nauk BSSR*, 2, No. 4, 143–146. 42. On the theory of the Riccati equation. *Inzhenerno-Fizicheskii Zhurnal* (IFZh), 1, No. 4, 76–80; *Doklady Akademii Nauk BSSR*, 2, No. 9, 359–362.

1959–1960 43. On the structure of solutions of an invariant linear system of differential equations. *Doklady Akademii Nauk BSSR*, No. 2, 33–37. 44. On the stability of solutions of a system of linear homogeneous differential equations with periodic (and other) coefficients. *PMM*, Issue 5, 818–825. 45. Expansion of a function of matrices into a series in terms of a parameter. *Doklady Akademii Nauk BSSR*, No. 7, 292–293. 46. Works of Soviet mathematicians on the analytical theory of differential equations (Report at the scientific session of the Physics and Mathematics Faculty of BGU, dedicated to the 40th anniversary

of the Great October Socialist Revolution). *Trudy Instituta Fiziki i Matematiki AN BSSR*, Issue 3. 47. Methods for investigating the stability of solutions of linear systems of differential equations with non-periodic coefficients containing a small parameter. *IFZh*, No. 2, 115–127. 48. Expansion of an irregular value of a function of a matrix into a series in terms of a parameter. *Doklady Akademii Nauk BSSR*, No. 8, 323–324.

1961–1963 49. Necessary and sufficient conditions for the existence of roots of equation (1) located on the unit circle. *Doklady Akademii Nauk BSSR*, No. 11, 483–485. 50. On the theory of reducible systems of ordinary linear differential equations. *Doklady Akademii Nauk BSSR*, No. 12, 533–534. 51. Solution of questions regarding the existence of bounded solutions of a system of linear homogeneous differential equations with periodic coefficients based on integral substitution. Part 1. *Vestsy AN BSSR, Seriya Fizika-Tekhnichnykh Navuk*, No. 4, 24–29. 52. Solution of questions regarding the existence of bounded solutions of a system of linear homogeneous differential equations with periodic coefficients. Part 2. *Vestsy AN BSSR, Seriya Fizika-Tekhnichnykh Navuk*, No. 1, 5–12. 53. On periodic solutions of a linear homogeneous system of differential equations. *Doklady Akademii Nauk BSSR*, No. 7, 407–410. 54. On new research in the theory of linear differential equations with variable coefficients. *Visnyk Kyivskoho Universytetu, Seriya Matematyky ta Mekhaniky*, No. 5, Issue 1, 3–6. 55. On the theory of implicit functions. *Doklady Akademii Nauk BSSR*, No. 1, 5–8. 56. On the radius of convergence of series representing the periodic solution of a linear system of differential equations as functions of parameters. *Doklady Akademii Nauk BSSR*, No. 2, 73. 57. On periodic and bounded solutions of the equation

$$\ddot{x} + P(t)x = 0, \quad P(t+1) = P(t).$$

Vestsy AN BSSR, Seriya Fizika-Tekhnichnykh Navuk, No. 1, 5–13. 58. A. M. Letov' s problem. *Doklady Akademii Nauk BSSR*, No. 9, 577–579.

1966–1967 59. *Linear Systems of Ordinary Differential Equations* (Monograph). Minsk. 60. On the theory of canonical systems. *Differentsial' nye Uravneniya*, No. 10, 1317–1332. 61. Lyapunov' s first method. *Differentsial' nye Uravneniya*, No. 4, 531–578. 62. *On Those Who Stood Firm* (Academy of Sciences of the BSSR, 1961, 192 pp.). Memoirs of N. Erugin, commander of the 2nd anti-tank 45-mm artillery platoon, 466th Infantry Regiment, 125th Infantry Division, on the Leningrad Front (Sept 13, 1941 –Feb 22, 1942). This platoon remained in combat security at the front line of the infantry regiment for five months without relief and participated in all battles from October 5, 1941, to February 22, 1942.

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