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Editorial

Recent Advances in Oscillation Theory 2011

Yuri V. Rogovchenko,[1] Leonid Berezansky,[2] Elena Braverman,[3] and Josef Diblík[4]

[1] *Department of Mathematics and Mathematical Statistics, Umeå University, 901 87 Umeå, Sweden*
[2] *Department of Mathematics, Ben-Gurion University of the Negev, Beer-Sheva 84105, Israel*
[3] *Department of Mathematics and Statistics, University of Calgary, 2500 University Drive NW, Calgary, AB, Canada T2N1N4*
[4] *Department of Mathematics, Faculty of Electrical Engineering and Computer Science, Brno University of Technology, 616 00 Brno, Czech Republic*

Correspondence should be addressed to Yuri V. Rogovchenko, yuriy.rogovchenko@math.umu.se

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Theory of oscillations is an important and well-established branch of the modern theory of differential equations concerned, in a broad sense, with the study of oscillatory phenomena arising in applied problems in technology, natural, and social sciences. Theoretical aspects of the classical theory of oscillations regard existence and nonexistence of oscillatory (periodic, almost periodic, etc.) solutions to a given equation or system, and description of asymptotic behavior of such solutions. It is well known that oscillation of solutions is an intrinsic feature of many dynamical systems. Furthermore, oscillations can be induced in a nonoscillatory system by nonlinear terms, delayed or advanced arguments, randomness, though these factors may also destroy oscillations arising in the original system.

Papers included in this special issue address a number of challenging problems related to nonlinear oscillations, and describe novel techniques and approaches to classical problems in the theory of oscillations and beyond. Although the main focus of this issue is on oscillations, the editors are pleased to acknowledge several interesting contributions that develop new general methods applicable to wide classes of problems and deal with questions that are not directly related to oscillations.

The issue opens with the contribution by H. A. Agwo et al. who use a generalized Riccati transformation, monotonicity arguments, and standard results on dynamic equations for establishing oscillation criteria for a class of second-order nonlinear delay dynamic equations on time scales. Several examples illustrate theoretical results.

V. G. Angelov and D. Tz. Angelova study a lossless transmission line terminated by a nonlinear resistive load and parallel connected capacitance. Using Krasnoselskii fixed point theorem, they establish existence of solutions to an equivalent initial value problem for