

# New and old Aspects of Spline Function Theory

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Spline Theory is nowadays a very active field of the Modern Applied Mathematics and Approximation Theory. The fact that in the last four decades there have been published more than 395 books, monographs and conference reports, more than ten thousand original papers and more than 387 dissertations for doctor's degree or habilitation on various aspects of spline functions and their applications, shows the generality and applicability of this field in the current mathematical research, as well as, in others sciences. In addition, the spline functions are easy to evaluate and manipulate on computer, a lot of applications in the numerical solution of problems in applied mathematics has been found. The actual development of the spline theory has essential influence on the following areas of modern numerical mathematics: interpolation and approximation, numerical integration and differentiation, numerical treatment of ordinary and partial differential equations, numerical solution of integral equations, optimal approximation, calculation of eigenvalues and eigenfunctions of operators, control theory, computer aided geometric design, numerical methods of probability theory and statistics, wavelets theory (spline wavelets), etc. In this talk we shall make a survey of the most important steps of the development of the spline theory, underlining the contribution of L. Colatz, and especially the numerical solution of nonlinear partial differential equation problems by means of spline functions.