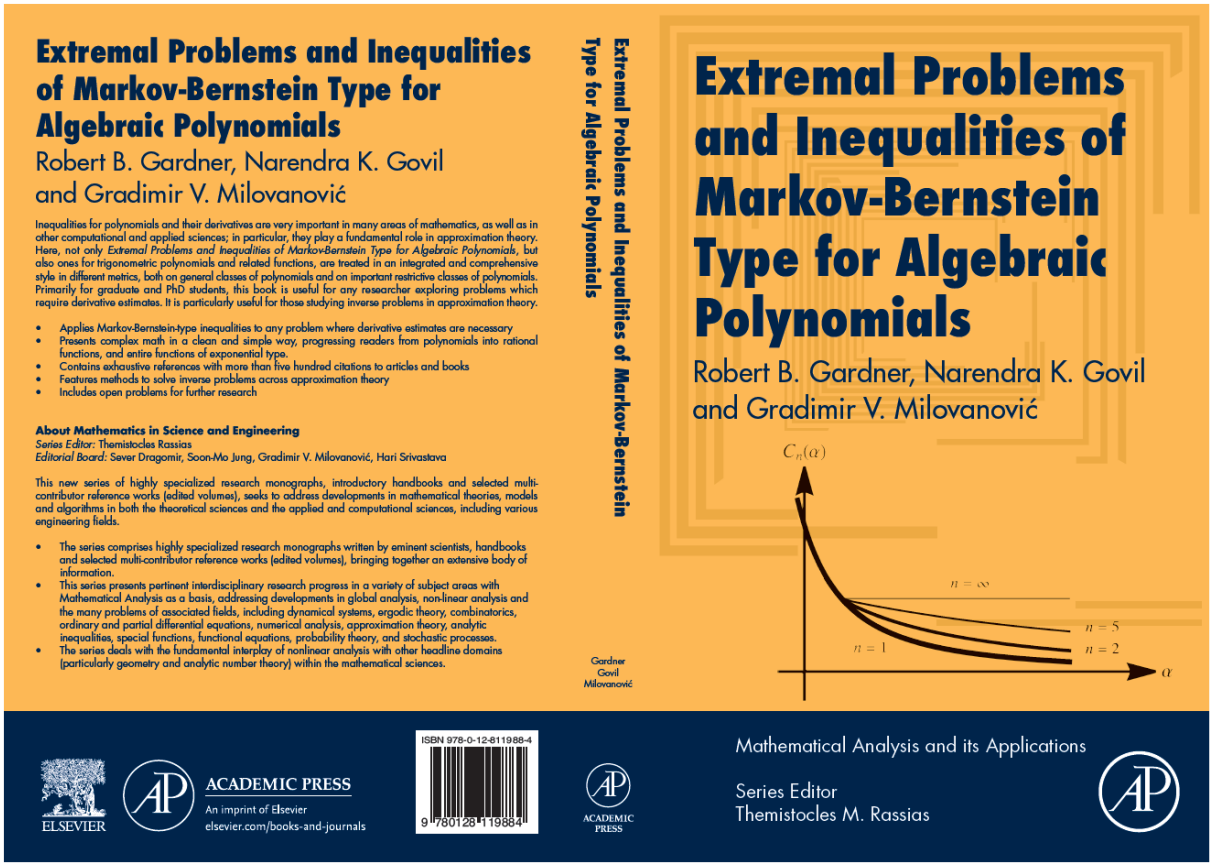
Presentation of the promotion of the content of the monograph

Extremal problems and inequalities of Markov-Bernstein type of algebraic polynomials */ Robert B. Gardner, Narendra K. Govil, Gradimir V. Milovanović. – London : Academic Press, 2022*



Recently, the Serbian Academy of Sciences and Arts (SANU) presented the content of a monograph important for science entitled:

Extremal problems and inequalities of Markov-Bernstein type of algebraic polynomials

The authors are distinguished scientists - mathematicians: Robert B. Gardner, Narendra K. Govil, Gradimir V. Milovanović. The content of the monograph is laid out on 471 pages, and with the bibliography it contains 521 references. Published by London : Academic Press, 2022.

On the back cover of the monograph, among other things, it is written:

" Inequalities for polynomials and their derivatives are very important in many areas of mathematics, as well as in other computational and applied sciences; in particular, they play a fundamental role in approximation theory. Here, not only Extremal Problems and Inequalities of Markov-Bernstein Type for Algebraic Polynomials, but also ones for trigonometric polynomials and related functions, are treated in an integrated and comprehensive style in different metrics, both on general classes of polynomials and on important restrictive classes of polynomials. "

At the promotion of this monograph, in SAsa, the following spoke: Academician Miodrag Mateljević, Professor Miloš Arsenović, and Professor M. Albijanic.

Professor Albijanić stated that the author is academician G. Milovanović is an **ambassador of the modern Serbian school of mathematics,** and is a leading scientist in the field of Numerical Analysis**.**

We add to this that academician Gradimir Milovanović is a master of electronics by basic education, and a scientist in the field of mathematics, especially mathematical analysis, according to his scientific results. He studied and collaborated with the famous professor from Serbia, Dragoslav Mitrrinović, who belongs to the Serbian School of Mathematics, which was founded by Mihailo Petrović, through numerous mentorships over the doctorantes. Let's also mention that Mihaio Petrović studied mathematics and physics at the Sorbonne in Paris and defended his doctorate before the Commission composed of French scientists Penelve, Hermite and Picard, but he was also one of the three doctoral students of the magnificent Julius Henri Poincaré.

We state this to emphasize the exceptionality of one of the three authors of this monograph, and his scientific contribution, which he gave to the contents of this monograph, and that he is a worthy scientist in the field of mathematics, his ancestors, who passed on their knowledge and inspired Serbian mathematicians throughout the centuries.

Academician Milovanović emphasized and poited out the following in his speech:

" During aperiod of 130 years, a huge number of papers were published and the theory of extremal problems of Markov–Bernstein type and many a p-plications of this type of polynomial in equalities were rapidly developed and established.

Also, several monographs were published in this area, including the following three:

[B1] G.V.Milovanovi´c, D.S.Mitrinovi´c, Th.M.Rassias, *Topics in Polynomials: Extremal Problems, Inequalities, Zeros*, World Scientific Publishing Co., Inc., River Edge, NJ,1994;

[B2] P. Borwein,T.Erdélyi, *Polynomials and Polynomial Inequalities*, Springer-Verlag New York,1995;

[B3] Q.I. Rahman, G.Schmeisser, *Analytic TheoryofPolynomials*, The Clarendon Press, Oxford University Press, Oxford, 2002. In a sense, the present book is as equel of Chapter 6 from

[B1](Extremalprob- lems ofthe Markov-Bernstein type), where previous resultsonthis topicare presented on almost 200pages."

The present Monograph is divided into six chapters.

The first chapter provides an account on the history of a short introduction.

Садежај монографије је састављен од предговора и библиографије, и шест следећих поглавља:

The content of the monograph consists of a preface and a bibliography, and the following six chapters:

Preface

1. **History and introduction: classical Markov–Bernstein inequalities**
2. **Different types of Bernsteinin equalities**
3. **Extremal problems of Markov–Bernstein type in integral norms**
4. **Bernstein-type inequalities for polynomials with restricted zeros**
5. **Bernstein-type inequalities in the** Lr **norm**
6. **Bernstein-type inequalities for polar derivatives of polynomials**

Each chapter contains several specialized, three to five, subchapters, sections and several sub-sections. Here, it is particularly worth highlighting the third chapter on **Extremal problems of Markov–Bernstein type in integral norms**, and the subchapters contained in it:

3.1.4 Differentiation formula for classical orthogonal polynomials
3.3.1 Landau–Kolmogorov-type polynomial inequalities
3.3.2 Agarwal–Milovanovi´c's extension of Varma's in equality to the classical orthogonal polynomials

This present and latest monograph was preceded by a previous monograph entitled: "**Topics in polynomials: Extremal problems,**

inequalities, zero" written by authors G. Milovanović, D. Mtribović and Th. M. Rasias published by World Scientific in 1994. The scientific results of this monograph were also included in parts of the new monograph to be published in 2022.

TOPICS IN POLYNOMIALS:

EXTREMAL PROBLEMS, INEQUALITIES, ZEROS

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I am free to recommend the content of this new monograph from 2022, as well as the previous one from 1994, not only to mathematicians, but also to researchers from various scientific

fields, who use orthogonal polynomials for various approximations of nonlinear process in dynamics. I especially recommend the contents of these monographs to those who are dedicated to research in the field of nonlinear dynamics, and especially to researchers dedicated to the discovery of new nonlinear and singular phenomena and approximations of the dynamics of phenomena in the field of nonlinear dynamics, and especially to those who rely on numerical experiments in research.

Katica (Stevanović) Hedrih, MI SANU


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