

APPLICATIONS OF THE SOLUTIONS OF TWO ABSTRACT
MOMENT PROBLEMS TO THE CLASSICAL
MOMENT PROBLEM

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Abstract. We apply Theorems 1 and 4 [12] to some classical moment problems in spaces of analytic or real-differentiable functions, considered as real ordered normed vector spaces. Our solutions are operator-valued and satisfy some natural sandwich-type conditions. The present work is related to the papers [6], [10], [12], [13], [14], [16], [17].

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REFERENCES

- [1] AKHIEZER, N.I., *The Classical Moment Problem and Some Related Questions in Analysis*, Oliver and Boyd, Edinburgh and London, 1965.
- [2] AMBROZIE, C. and OLTEANU, O., *A sandwich theorem, the moment problem, finite-simplicial sets and some inequalities*, Rev. Roumaine Math. Pures Appl., **49** (2004), 189–210.
- [3] CRISTESCU, R., *Functional Analysis*, Second edition, Didactical and Pedagogical Publishing House, Bucharest, 1970 (in Romanian).
- [4] CRISTESCU, R., *Ordered Vector Spaces and Linear Operators*, Abacus Press, Tunbridge Wells, Kent, 1976.
- [5] CRISTESCU, R., GRIGORE, GH., NICULESCU, C., PĂLTINEANU, G., POPA, N. and VUZA, D.T., *Ordered Structures in Functional Analysis*, Vol. **3**, Romanian Academy Publishing House, Bucharest, 1992 (in Romanian).
- [6] KREIN, M.G. and NUDELMAN, A.A., *Markov Moment Problem and Extremal Problems*, Transl. Math. Mono. Amer. Math. Soc., Providence R.I., 1977.
- [7] LEMNETE, L., *An operator-valued moment problem*, Proc. Amer. Math. Soc., **112** (1991), 1023–1028.
- [8] LEMNETE, L., *Application of the operator phase-shift in the L-problem of moments*, Proc. Amer. Math. Soc., **123** (1995), 747–754.
- [9] LEMNETE-NINULESCU, L. and OLTEANU, O., *Extension of linear operators, distanced convex sets and the moment problem*, Mathematica, **46 (69)**, (2004), 81–88.
- [10] NICULESCU, M. and OLTEANU, O., *Applications of two sandwich theorems for linear operators to the moment problem in spaces of analytic functions*, Rev. Roumaine Math. Pures Appl., **44** (1999), 807–817.
- [11] NICULESCU, C. and POPA, N., *Elements of Banach Spaces Theory*, Romanian Academy Publishing House, Bucharest, 1981 (in Romanian).
- [12] OLTEANU, O., *Application de théorèmes de prolongement d'opérateurs linéaires au problème des moments et à une généralisation d'un théorème de Mazur-Orlicz*, C.R. Acad. Sci. Paris, **313** (1991), 739–742.

- [13] OLTEANU, O., *Applications of a general sandwich theorem for operators to the moment problem*, Rev. Roumaine Math. Pures Appl., **41** (1996), 513–521.
- [14] OLTEANU, O., *Two sandwich theorems for linear operators and the moment problem*, Balkan Journal of Geometry and Its Applications, **1** (1996), 75–85.
- [15] OLTEANU, O., *Applications of the solution of the abstract moment problem to the classical moment problem*, Stud. Cerc. Mat., **49** (1997), 93–102.
- [16] OLTEANU, O., *Extension of linear operators and moment problems in spaces of analytic functions*, Rev. Roumaine Math. Pures Appl., **47** (2002), 737–742.
- [17] OLTEANU, O., *Moment problems in sequence spaces*, U.P.B. Sci. Bull., Series A, **64** (2002), 3–12.
- [18] OLTEANU, O., *New aspects of the classical moment problem*, Rev. Roumaine Math. Pures Appl., **49** (2004), 63–77.
- [19] RUDIN, W., *Real and Complex Analysis*, McGraw-Hill, New York, 1966.
- [20] SCHAEFER, H.H., *Topological Vector Spaces*, MacMillan Company, New York, London, 1966.
- [21] VASILESCU, FL.-H., *Initiation in the Theory of Linear Operators*. Technical Publishing House, Bucharest, 1987 (in Romanian).

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