ON A FUNCTIONAL CALCULUS FOR UNITARY
OPERATORS IN PONTRYAGIN SPACES

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Abstract. This work is devoted to a functional description of the weakly closed algebra generated by a Pontryagin Space unitary operator under the condition that this operator contains a part like the two-side shift operator. The latter means that the inverse operator does not belong to the algebra.

REFERENCES

[1] T. YA. AZIZOV, I. S. IOKHVIDOV, *Foundation of the Theory of Linear Operators in Spaces with Indefinite Metric* (Russian), Nauka, Moscow, 1986.

[2] T. YA. AZIZOV, I. S. IOKHVIDOV, *Linear Operators in Spaces with Indefinite Metric* (English), Wiley, New York, 1989.

[3] J. BERGH, J. LÖFSTRÖM, *Interpolation spaces. An Introduction*, Springer Verlag, NY, 1976.

[4] M. S. BIRMAN, M. Z. SOLOMYAK, *Spectral theory of self-ajoint operators in a Hilbert space* (Russian), Leningrad University, Leningrad (USSR), 1980.

[5] O. BRATTELI, D. W. ROBINSON, *Operator Algebras and Quantum Statistical Mechanics*, Volume 1, Springer-Verlag, NY, 1979.

[6] G. B. FOLLAND, *Real Analysis. Modern Techniques and Their Applications, 2nd edition*, J.W.& Sons, Inc., 1999.

[7] J. B. GARNETT, *Bouded Analytic Functions*, Academic Press, New York–London–Toronto–Sydney–San Francisco, 1981.

[8] K. HOFFMAN, *Banach spaces of analytic functions*, Prentice-Hall Series in Modern Analysis, N.Y., 1962.

[9] S. G. KREIN, YU. I. PETUNIN, YE. M. SEMYONOV, *Interpolation of linear operators* (Russian), Nauka, Moscow, 1978.

[10] M. A. NAIMARK, *Normed Algebras*, Wolters-Nordhoff Publishing, Groningen, The Nedherlands, 1972.

[11] M. REED, B. SIMON, *Methods of Modern Mathematical Physics. I: Functional Analysis 2nd Edition*, Acad. Press, Inc., 1980.

[12] D. SARASON, *Invariant subspaces and unstarred operator algebras Pacific Journal of Mathematics*, **17**, 3 (1966), 511–517.

[13] J. J. SCHAFFER, *Linear Algebra*, World Scientific Publishing Co Pte Ltd, Singapore, 2014.

[14] G. YE. SHILOV, *Mathematical Analysis: A Special Course*, Pergamon Student Editions, 1965.

[15] V. A. STRAUSS, *Functional representation of an algebra generated by a selfadjoint operator in Pontryagin space Funktsionalnyi analiz i ego prilozheniya* (Russian), English translation: Funct. Anal. Appl. **20**, 1 (1986), 91–92.

[16] V. A. STRAUSS, *On an analog of the Wold decomposition for a π-semi-unitary operator and its model representation*, Contemporary Mathematics (USA: AMS), 1995, pp. 473–484.

[17] V. STRAUSS, *A functional description for the commutative WJ^*-algebras of the D_κ^+-class*, Proceedings: Operator theory and indefinite inner product spaces, Oper. Theory Adv. Appl., Birkhäuser, Basel, 2006, pp. 299–335.

[18] V. STRAUSS, *Models of function type for commutative symmetric operator families in Krein spaces*, Abst. and Appl. Analysis **2008** Article ID 439781 (2008), 40 pages.

[19] V. STRAUSS, *On the weakly closed algebra generated by a unitary operator in a Pontryagin space*, OaM **12**, 3 (2018), 837–853.

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