

Table of Contents

Editorial Introduction	viii
<i>D.Z. Arov, Yu.P. Ginzburg, S.M. Pozin, L.A. Sakhnovich</i>	
Vladimir Petrovich Potapov	xi
Curriculum Vitae of V.P. Potapov	xix
List of Publications of V.P. Potapov	xx
<i>I. Gohberg</i>	
Odessa reminiscences	xxiii
<i>L.B. Golinskii</i>	
The last days of Vladimir Petrovich Potapov	xxvi
<i>D.Z. Arov</i>	
The influence of V.P. Potapov and M.G. Krein on my scientific work	1
1. My first dissertation	1
2. A tilt toward operator theory	4
3. The results of Potapov's group in network theory	5
4. Darlington method in the general theory of passive systems	7
5. Regular j -inner matrix functions and related generalized bitangential problems	11
References	13
<i>T.Ja. Azizov, E.I. Iohvidov</i>	
The development of some of V.P. Potapov's ideas. The geometric theory of operators in spaces with indefinite metric	17
References	25
<i>Yu.P. Ginzburg, L.V. Shevchuk</i>	
On the Potapov theory of multiplicative representations	28
References	44

<i>T.S. Ivanchenko, L.A. Sakhnovich</i>	
An operator approach to the Potapov scheme for the solution of interpolation problems	48
Chapter I. Potapov's method of solution of interpolation problems	48
1. Some information from j -algebra	48
2. Nevanlinna-Pick problem	53
3. The Schur problem	58
Chapter II. Operator identities and interpolation problems	61
Introduction	61
1. Formulation of the problem	61
2. The fundamental matrix inequality	63
3. The transformed inequality	67
4. The solution of nondegenerate interpolation problems	69
5. Weyl discs	72
6. Degenerate interpolation problems and the method of regularization	76
7. Applications of the general theory	78
References	84
<i>V.E. Katsnelson</i>	
Description of a class of functions which admit an approximation by rational functions with preassigned poles I	87
Introduction	88
2. The class $PCNM$ of pseudocontinuable functions	94
3. The Smirnov class N_*	97
4. The weighted space $PCH_w^p(I^+, I^-)$ of pseudocontinuable meromorphic functions with prescribed denominators	101
5. G. Ts. Tumarkin's theorem on functions which admit weighted approximation by a sequence of rational functions with preassigned poles . .	107
6. Formulation of the main approximation theorem	113
7. A fundamental approximation Lemma	114
References	128
<i>A.Ya. Kheifits, P.M. Yuditskii</i>	
An analysis and extension of V.P. Potapov's approach to problems with applications to the generalized bi-tangential Schur-Nevanlinna-Pick problem and J-inner-outer factorization	133
1. Potapov's approach to the Nevanlinna-Pick problem	134
2. An analysis of Potapov's approach and the AIP	137
3. The abstract interpolation problem	142
4. The AIP and unitary extensions of an isometry	144
5. The generalized bi-tangential Schur-Nevanlinna-Pick (SNP) problem . .	147
6. Inner-outer factorization of J-contractive matrix-functions	154
References	158

<i>M.G. Krein, I.E. Ovcharenko</i>	
On the theory of inverse problems for the canonical differential equation	162
References	168
Addendum	169
<i>A.A. Nudel'man</i>	
Some properties of linear-fractional transformations and the harmonic mean of matrix functions	171
References	183
<i>A.L. Sakhnovich</i>	
Modification of V.P. Potapov's scheme in the indefinite case	185
0. Introduction	185
1. Preliminaries	186
2. Basic propositions	189
3. Extensions of the operator S	195
4. Examples	
References	200
<i>L.A. Sakhnovich</i>	
Inverse problems for equations systems	202
1. Introduction	202
2. Existence theorems	203
3. Classical examples	204
4. Uniqueness theorems	207
References	210