

# Contents

<a href="#">Introduction</a>	<a href="#">3</a>
<b>1 Regularization of nonlinear operator equations.</b>	<b>9</b>
§1.1 The basic definitions. . . . .	9
§1.2 Setting of the problem and the regularization method. . .	21
§1.3 The residual method. . . . .	29
§1.4 Approximation of the regularized solution. . . . .	32
<b>2 Regularization of systems of nonlinear operator equations.</b>	<b>47</b>
§2.1 The basic definitions. . . . .	47
<a href="#">§2.2 Setting of the problem and the regularization method. . .</a>	<a href="#">56</a>
§2.3 The residual method. . . . .	67
§2.4 Approximation of the regularized solution. . . . .	71
§2.5 Regularization of the inverse filtration problem. . . . .	80
<b>3 <math>T</math>-regularization of nonlinear operator equations.</b>	<b>87</b>
§3.1 The basic definitions. . . . .	87
§3.2 The $T$ -regularization method. . . . .	102
§3.3 The $T$ -residual method. . . . .	111
§3.4 Approximation of the $T$ -regularized solution. . . . .	113
<b>4 Generalized regularization of nonlinear equations.</b>	<b>135</b>
§4.1 Convergence of the generalized regularization method when solving the equation with a weakly-strongly closed operator. . . . .	135

§4.2	The convergence of the residual method for equations with the weakly-strongly closed operator. . . . .	142
§4.3	Approximation of the regularized solution.(The case of a weakly-strongly closed operator). . . . .	145
§4.4	The criterion of convergence of the generalized regularization method for solving nonlinear operator equations. . . . .	149
§4.5	The convergence of the residual method for solving nonlinear equations. . . . .	172
§4.6	The approximation of the regularized solution to an equation with an operator satisfying the condition $(C)$ . . . . .	176
<b>5</b>	<b>The approximate regularization of nonlinear operator equations.</b>	<b>183</b>
§5.1	The basic definitions. . . . .	184
§5.2	The convergence of the approximate regularization method. . . . .	197
§5.3	Examples of operators. . . . .	206
<b>Bibliography</b>		<b>231</b>