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## THEORY OF BRANCHING OF SOLUTIONS OF NON-LINEAR EQUATIONS

*M. M. Vainberg and V. A. Trenogin*

More than 35 years have elapsed since the publication of Lichtenstein's monograph on the branching of solutions of certain classes of analytic non-linear integral and integro-differential equations.

Since then branching theory has developed at an intense pace and new, important results have been obtained, so that by now the branching theory for solutions of non-linear equations with analytic operators has in a sense attained its zenith.

However, literature on this problem, to which the present authors have also contributed, is available only in the form of brief notes and scientific papers, published both in the Soviet Union and abroad.

This is the motivation for the present book, which aims at a systematic exposition of branching theory for non-linear equations with analytic operators.

In order to make the book accessible to a wider range of readers, we have made every attempt to lead up gradually from the foundations to the more difficult material.

For this reason, the exposition begins with the classical problem of implicit functions, integral, differential and integro-differential equations, finally reaching the level of equations in Banach spaces and related problems of perturbation theory.

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*K. S. Sibirsky*

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*N. Dinculeanu*

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The authors have of necessity assumed a certain familiarity with infinite group theory, finite-dimensional and free Lie algebras, and parts of ring theory, but results quoted without proof are given adequate references. The references themselves divide into two parts: the first a fairly comprehensive (though doubtless idiosyncratic) list of some 250 items of more or less direct relevance to infinite-dimensional Lie algebras; the second containing all other material referred to in the text.

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