

Multiple Solutions of Nonlinear Equations and their Applications¹

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Abstract: In the paper systems of nonlinear equations of the form

$$F(x) = 0 \tag{1}$$

are considered. It is assumed that the Jacobian is singular on the solution. For problems (1), the notation of multiplicity of the solution has been introduced and the connection between multiplicity and the index of matrix pencil has been established. The connection between the kind of the stationary point of the function and multiplicity of the system, to which the stationary point satisfies, is discussed.

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