

Analytical Method of Identification of Linear Non-oscillation Second Order Systems

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Today there is no analytical method of identification of linear non-oscillation second order systems. A new analytical method to identify such system is proposed. The transient process raised in the system analyzed is discussed. Such process is described by the sum of steady state component and two exponents with different time constants. Choosing an interval, where influence of the exponent with smaller time constant is negligibly small, the steady state value, the coefficient and the time constant of the exponent with the larger time constant are calculated using any three equidistant points during the interval. The results obtained allow to calculate the time constant and the coefficient of the second exponent using any two points during the initial part of the process. Thus, all necessary parameters of the system: steady-state, coefficients and time constants of the exponents are found. These are the main advantages of the method in comparison with those used today. The experimental and theoretical results of the method application are in a good agreement.