Author’s introduction: The problem of control system synthesis can be formulated as a condition that the transfer function of the designed system (object + controller) be identical to a specified transfer function of a standard system that satisfies all the engineering requirements. To provide for a physically realizable controller and a robust system, one has to specify the transfer function of the standard system in a special way; however, the controller may turn out to be unjustifiably complex in this case. At the same time, the requirement that the transfer function of the designed system be precisely identical to the desired one is not justified since a multiplicity of systems, usually only one of which is the standard system, satisfies the specified engineering requirements.


This paper develops the interpolation method proposed in the author’s paper (loc. cit.). It differs from that paper in that any points of the complex plane can serve as the node points, which allows to reduce the problem of specified positions of the poles and the zeros to an interpolation problem. Thus, the proposed approach allows one to combine frequency and root synthesis methods on one algorithmic basis.

MSC: 93B50 Synthesis problems 93C80 Frequency-response methods in control theory

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