A LINEAR PROGRAMMING APPROACH FOR CALCULATION OF ALL STABILIZING PARAMETERS OF LEAD/LAG CONTROLLERS

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ABSTRACT

Lead/Lag controllers are used extensively in industry and there is no straight forward and general solution to the problem of calculating all stabilizing parameters of Lead/Lag controllers. In this paper, a linear programming approach is proposed to calculate all stabilizing parameters of Lead/Lag type controllers for a given continuous-time plant from an arbitrary order. The proposed method is based on the extension of Hermite-Biehler Theorem, which has been proposed for calculating all stabilizing PID gains for a given continuous-time system in [6]. The linear programming nature of the proposed approach is its main advantage, which leads to the computer-aided computation of the above problem. The applicability of the method is verified through a numerical example.

KeyWords: Control systems, parametric design, lead/lag controllers, stabilizing parameters, linear programming.