Explicit formulas for synthesis of controller and observer for descriptor system

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Explicit formulae for state controller and observer synthesis providing the desired coefficients of the closed system characteristic polynomial are obtained on the basis of band controllability and observability matrices of linear differential-algebraic system with one input and one output. Given formulae play the same role for differential-algebraic systems as Ackermann and Bass-Gura formulae do for normal linear systems.

Keywords: *descriptor system, controllability, observability, band matrix, controller, observer, explicit formula.*

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