Rationalized Haar Transforms Approach to Design of Observer for Control Systems with Unknown Inputs

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Abstract : The fundamental concept of observability is important in both theoretical and practical points of modern control systems. In modern control theory, a control system has criteria for determining the design solution exists for the system parameters and design objectives. The idea of observability relates to the condition of observing or estimating the state variables from the output variables that is generally measurable. To design closed-loop control system, the practical problems of implementing the feedback of the state variables must be considered and implementing state feedback control problem has been existed in this case. All the state variables are not available, so it is requisite to design and implement an observer that will estimate the state variables form the output parameters. However sometimes unknown inputs are presented in control systems as practical cases. This paper presents a design method and algorithm for observer of control system with unknown input parameters based on Rationalized Haar transform. The proposed method is more advantageous than the other numerical method.

Keywords : orthogonal functions, rationalized Haar transforms, control system observer, algebraic method
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