1106-93-1929 **Thanuka Hansameenu Pathiranage*** (hansameenu.wijenayaka@ttu.edu), Texas Tech University, Department of Mathematics and Statistics, Broadway and Boston, Lubbock, TX 79409.
Analysis of the Error in an Iterative Algorithm for Solution of the Regulator Equations for linear distributed parameter Control Systems.

The regulator equations are a coupled pair of operator equations that arise in the geometric approach to regulation in systems and control. The main problems of control for this work consist of asymptotic tracking and disturbance rejection for linear parabolic distributed parameter systems. Our approach to solving problems of this type is geometric regulation in which control laws are obtained by solving the regulator equations. In this work we present the β-iteration method for obtaining approximate solutions of regulator equations for infinite dimensional linear control systems with bounded input and output operators in the Hilbert state space. A major advantage of this theory compared to previous works is that it can be applied to any smooth reference signal and an explicit error analysis is available for each step in the iteration. In this work, we describe the β-iteration method and present an analysis of the error for the iterative method. We also give theoretical estimates for its convergence. The convergence of the iterative method depends on the parameter β, $(0 < \underline{¡}1)$ and also on the exponential stability of the C_0 semigroup generated by the open loop plant. (Received September 15, 2014)