ABSTRACT

Speed of rotation in dc motor has a significant problem that is spurt response that make the system not stable. Instability of system will make it slow. Therefore we need a control system that can make the system more stable. In this research, analysis of Lyapunov stability in dc motor angular velocity control system. The control system used in this research is PID control system with lyapunov tuning method. In lyapunov tuning method there are 4 processes: system modeling, transfer function, PID-Lyapunov design, and analysis of lyapunov stability a. From result of design of PID-Lyapunov got value of Kp, Ki, and Kd. The value of Kp obtained is 0.87. The range of Ki values obtained is 0-0.047. While the value of Kd obtained is 0.035. Lyapunov tuning method obtained oscillation ratio of 22.12%. From the results of the oscillation ratio, the lyapunov tuning method produces a more stable system response.

Keyword : PID control, Lyapunov stability, DC Motor angular velocity control system.