Abstract

A Fractional Order (FO) Proportional- Integral- Derivative (PID) controller has been proposed in this paper which works on the closed loop error and its fractional derivative and fractional integrator. FOPID is a PID controller whose derivative and integral orders are of fractional rather than integer. The extension of derivative and integral order from integer to fractional order provides more flexibility in design of the controller, thereby controlling wide range of dynamics of a system. Frequency domain specifications are used as the performance criteria to be optimizing the FOPID controller parameters: Proportional (Kp), Integral (Ki), Derivative (Kd) gains, integral order (\(\alpha\)), and the derivative order (\(\beta\)).
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Index Terms
Computer Science
Electrical And Instrumentation

Keywords
Fractional Order Controller Cstr Process Tuning Zn Method Astrom Method