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## ANALYTICAL STRUCTURES FOR FUZZY PID CONTROLLERS AND APPLICATIONS

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### Abstract

*In the present work, analytical structures for fuzzy proportional-integral-derivative (PID) controllers are derived via triangular membership functions for inputs; triangular membership functions for output; minimum triangular norm; different combinations of two triangular co-norms (maximum, drastic sum) and five inference methods (such as Mamdani minimum, Larsen product, drastic product, bounded product and standard sequence) and center-of-sum defuzzification method. Computer simulations are included to demonstrate the effectiveness of the fuzzy PID controller over the conventional controller for time-delay and non-linear systems.*

### Author Keywords

Analytical Structures, Bounded product, Drastic product, Larsen product, Standard Sequence, Triangular co-norm.

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