Abstract

Wind tunnels are being used to study the aerodynamic properties of race cars, fighter planes etc. It allows us to make a reusable prototype and test it in the tunnel. Hypersonic wind tunnels operate at hypersonic speeds i.e., with a Mach number greater than 6. For doing experiments, it is necessary to maintain a constant pressure in the settling chamber of the tunnel so that we get the desired Mach number and mass flow rate through the nozzle. Here, a fuzzy assisted PI control system incorporating anti-reset wind up is developed for regulating the pressure and hence a constant mass flow rate in the hypersonic intermittent blow down type wind tunnel and the results obtained are analysed.

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Index Terms

Computer Science
Artificial Intelligence

Key words

Hypersonic wind tunnel
anti reset windup
fuzzy assisted PI controller