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A robust power system stabilizer for enhancement of stability in power system using adaptive fuzzy sliding mode control

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Highlights (for review)

1. Design of power system stabilizer (PSS) based on fuzzy, fuzzy sliding mode control (FSMC), integral sliding mode control (I-SMC) and adaptive fuzzy sliding mode control (AFSMC) for stability improvements
2. In the proposed adaptive fuzzy sliding mode controller (AFSMC), the stability is ensured through Lyapunov analysis and synthesis test.
3. In addition to the graphical simulation analysis, a quantitative stability approach and real-time test using OPAL-RT OP5600 is also carried out in order to augment the stability study.
4. Further, stability test using eigen modes, root locus and Bode plots are presented to assess the stability performance of the proposed controller.
5. Both the qualitative and quantitative analysis ensures better and robust performance of proposed controllers in comparison to the conventional fuzzy-PID, controller.

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