

Phasor Measurement Unit Based on Particle Filtering

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Abstract : Phasor Measurement Units (PMUs) are very sophisticated measuring devices that find amplitude, phase and frequency of various voltages and currents in a power system. Particle filter is a state estimation technique that uses Bayesian inference. Particle filters are widely used in pose estimation and indoor navigation and are very reliable. This paper studies and compares four different particle filters as PMUs namely, generic particle filter (GPF), genetic algorithm particle filter (GAPF), particle swarm optimization particle filter (PSOPF) and adaptive particle filter (APF). Two different test signals are used to test the performance of the filters in terms of responsiveness and correctness of the estimates.

Keywords : phasor measurement unit, particle filter, genetic algorithm, particle swarm optimisation, state estimation

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