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A Mathematical Model of Power System State Estimation for Power Flow Solution

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Abstract : The state estimation of the electrical power system operation state is very important for supervising task. With the nonlinearity of the AC power flow model, the state estimation problem (SEP) is a nonlinear mathematical problem with many local optima. This paper treat the mathematical model for the SEP and the monitoring of the nonlinear systems of great dimensions with an application on power electrical system, the modelling, the analysis and state estimation synthesis in order to supervise the power system behavior. in fact, it is very difficult, to see impossible, (for reasons of accessibility, techniques and/or of cost) to measure the excessive number of the variables of state in a large-sized system. It is thus important to develop software sensors being able to produce a reliable estimate of the variables necessary for the diagnosis and also for the control.

Keywords : power system, state estimation, robustness, observability
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