Conclusions

• When the voltage angle measurements sent from the buses to the control center each follows a two-component Gaussian mixture model, the active power flow injected to the \(i\)-th bus obeys an \(2\)-component Gaussian mixture model.

• The closed-form probability of unacceptable flow has also been derived.

• Discussed the effects of the transmission reliability, the susceptance matrix, the actual voltage angles, and the acceptable region on the power flow calculations using numerical examples.

Reference