

ABSTRACT: This paper deals with the solution of the power system state estimation problems using node voltages in rectangular coordinates. The Jacobian matrix is diagonalized and the mismatching vector modified following the ideas proposed by other investigators for decoupling the Jacobian matrix when using polar coordinates. The proposed method decouples the Jacobian matrix into real- and reactive-power submatrices, which are evaluated only once at the beginning of the process. The paper also presents an efficient data structure management technique to improve the computational process. The performance of these techniques are evaluated using several power system networks. The proposed rectangular-coordinate technique is compared with the Newton-Raphson method and a polar-coordinate method. The proposed data-storing method is compared with a standard technique.