عنوان مقاله:

An Improved Least Square Error Algorithm forDigital Relaying

محل انتشار:

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خلاصه مقاله:

In this paper a combination of the least square erroralgorithm (LSE) and decaying dc component estimation methodis applied to extract the phasors of both fundamental andharmonic elements. LSE has been widely used for voltage orcurrent phasor extraction because of its simplicity. Nevertheless,the LSE technique has certain disadvantages regarding its heavycomputational burden and its disability in accurate estimation ofdecaying dc component, which cause mal operation, especially indistance relays. To overcome these drawbacks, it is necessary tomodify the LSE. In this paper, at first, the decaying dccomponent is estimated and eliminated by subtracting the dcvalue from fault current signal after one cycle from the faultinstant and finally the LSE algorithm is used with the goal ofestimating the magnitude and phase of both fundamental andharmonic elements of the fault current signal. In order tovalidate the performance of the proposed algorithm, computersimulated signals generated by MATLAB are performed. Theproposed method has been evaluated and compared with theconventional LSE for a wide variety of signals including differentlevels of decaying dc magnitude and time constants. In order toevaluate and compare the proposed method comprehensively,standard performance indices including rise time, settling timeand overshoot are considered in this study. The simulationresults demonstrate the accuracy of our proposed method inphasor extraction in comparison with conventional LSEalgorithm.

کلمات کلیدی:

Decaying dc estimation; digital protection; leastsquare error algorithm; phasor estimation

لینک ثابت مقاله در پایگاه سیویلیکا: