Protective Relaying of Power Systems Using Mathematical Morphology

By Zhen Lu

Springer. Hardcover. Book Condition: New. Hardcover. 207 pages. Dimensions: 9.4in. x 6.3in. x 0.7in.The basic principle of protective relaying of power systems has not changed for more than half a century. Almost all power system protective relaying algorithms are dominated by integral transforms such as the Fourier transform and the wavelet transform. The integral transform can only provide an average attribute of the s- nals or their components. The accuracy of the attribute extraction is signicantly sacriced by the assumption of periodicity of the signals if the integral transform is appliedto transientsignals. Itis also wellknownthatthe signalsare liable to bec- taminatedbynoiseintheformofexponentiallydecayingDCoffsets, highfrequency transients, harmonic distortion, errors caused by non-linearityin the response of the sensors, and unwanted behaviour of power systems. This contamination is often provoked by fault conditions, just at the time when the protection relay is required to respond and trip the circuit breaker to limit damage caused by the fault. On the other hand, as we know, in most protection relays, complex computation has to be undertakenwithin a sampling interval, no matter how small the interval, to calculate the coefcients relevantto the attributes of the signals byusing the integral transform based on a window of samples, and to calculate...

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