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Partial Discharge Pattern Recognition Based Artificial Neural Network

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The purpose of this paper is the identification and classification of different sources of partial discharge (PD). These PD sources are due to artificially introducing defects, which are carefully designed in the power cable insulation. PD data is collected from the experimental work in high voltage laboratory with the aid of a conventional phase-resolved PD analyzer LDD-6. After that, the partial discharge pattern recognition (PDPR) which uses as a diagnostic tool is applied to the collected data to determine the partial discharge source as well as get information about the deterioration degree level of the insulation failure. The PDPR with artificial neural network (ANN)is applied to PD data to extract the appropriate features of each pattern of the PD source. These features are the fractal dimension and lacunarity which generate from the three-dimension PD pattern raw data.The ANN is used to improve the performance of PD classification systems which is the most priority of this work. The results indicate that the fractal dimension and lacunarity are sufficient to recognize the different PD patterns.

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