

عنوان مقاله:

A Hybrid Genetic Algorithm-Neural Network for Modeling of Periodic Nonlinearity in Three-Longitudinal-Mode Laser Heterodyne Interferometer

محل انتشار:

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خلاصه مقاله:

Laser heterodyne interferometer is a common nanometrology system which is used for high-accuracy displacement measurements in industry. Measurement accuracy in this system is limited by the periodic nonlinearity error. In this paper, the nonlinearity error of the nano-metrology interferometric system based on three-longitudinal-mode laser heterodyne interferometer has been modeled by artificial neural network (ANN) and hybrid genetic algorithm-neural network (hybrid GA-ANN). The real code version of genetic algorithm (GA) is used. Genetic operators and parameters are set and designed accurately for optimizing the neural network. The results indicate that nonlinearity error can be effectively modeled by hybrid GA-ANN method and contains minimum mean square error (MSE) compared to the neural network.

کلمات کلیدی:

Artificial neural network, Genetic algorithm, Heterodyne interferometer, Multi-layer perceptrons, Nonlinearity error

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