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基于改进型BP神经网络的弹丸落点预测方法(PDF)

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Title: A Projectile Impact-point Prediction Method Based on Novel BP Neural Network

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关键词: 神经网络; 自适应算法; 并列结构; 弹丸落点; 预测

Keywords: neural network; adaptive algorithm; coordinate structure; projectile impact-point; prediction

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摘要: 为了快速精确的预测弹丸落点,文中提出了一种基于改进型BP神经网络的弹丸落点的预测方法。根据落点预测的特殊性,在网络结构上确定了具有并列隐含层的双隐层结构形式,并对训练算法进行了自适应加动量项的改进,然后选取并优化了训练样本。之后进行了仿真训练和落点预测,得到了较高精度的预测结果。说明文中方法进行落点预测是合理有效的,可以作为弹丸落点预测的一种新方案。

Abstract: To predict the projectile impact-point precisely and quickly, a prediction method based on novel BP neural network was raised in this paper. According to the particularity of impact-point prediction, the two hidden layer structure with coordinate hidden layer was proposed, then the training algorithm was modified with adaptive and additional momentum, and then the training sample was optimized. At last, the network was trained and tested by simulation, and highly precise results were got, which means this method is reasonable and effective, and can be served as a new impact-point prediction approach.

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