

系统工程

基于Nash均衡的地空导弹兵混编群火力运用策略

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摘要:

建立了地空导弹兵混编群作战模型。该模型是一个离散、带有战斗力损耗的战斗状态向量空间模型。在混编群作战模型的基础上,给出地空导弹兵混编群火力运用目标函数,明确地空导弹兵混编群最优火力运用策略是混编群内各火力单位的最优射击策略组合,称为混编群火力运用的Nash均衡策略。针对求解地空导弹兵混编群火力运用问题的特点,改进了免疫粒子群算法,并验证了算法正确性。通过仿真得到地空导弹兵混编群火力运用策略,并给出战术解释。

关键词: 地空导弹兵混编群 Nash均衡 免疫粒子群 火力运用

Applying fire strategies of ground-to-air missile composite groups based on Nash equilibrium

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Abstract:

The model which is a discrete and attrited vector space one with a state of war for the ground-to-air missile (GAM) composite group is established. An objective function of GAM composite groups is given based on the model, and one definition is defined, it is that the optimization strategy of the GAM composite group called applying fire strategy of Nash equilibrium is composed of strategies of fire units within the GAM composite group. Furthermore, aiming at solving the problem of applying fire of GAM composite groups, an improved immune particle swarm optimization algorithm is proposed, and the accuracy of the algorithm is improved. Finally, according to the simulation analysis, the applying fire strategy of the GAM composite group is obtained with its tactical explanation.

Keywords: GAM composite group Nash equilibrium immune particle swarm applying fire

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