

## 电力系统

### 基于混沌人工鱼群算法的输电网规划方法

聂宏展<sup>1</sup>, 王毕元<sup>1</sup>, 孙金红<sup>2</sup>, 马元生<sup>2</sup>

1. 东北电力大学 电气工程学院, 吉林省 吉林市 132012; 2. 营口供电公司, 辽宁省 营口市 115002

#### 摘要:

人工鱼群算法收敛速度快, 但存在早熟收敛现象; 混沌优化算法具有遍历性、随机性和对初值敏感的特点, 虽然全局搜索能力强, 但收敛速度慢。大规模输电网规划方法对求解速度的要求越来越高, 为此结合人工鱼群算法和混沌优化算法, 提出了适用于输电网规划的混沌人工鱼群算法, 该算法继承了混沌优化算法特点, 使人工鱼群在搜索过程中避免陷入局部极值, 同时改进了人工鱼的视野和游动步长, 加快了寻优效率。算例结果验证了该算法的可行性。

#### 关键词:

### Transmission Network Planning Based on Chaotic Artificial Fish Swarm Algorithm

NIE Hongzhan<sup>1</sup>, WANG Biyuan<sup>1</sup>, SUN Jinhong<sup>2</sup>, MA Yuansheng<sup>2</sup>

1. School of Electrical Engineering, Northeast Dianli University, Jilin 132012, Jilin Province, China; 2. Yingkou Power Supply Company, Yingkou 115002, Liaoning Province, China

#### Abstract:

Artificial fish swarm algorithm can rapidly converge, but there is the defect of premature convergence; although chaotic optimization algorithm possesses strong searching capability due to its features of ergodicity, randomness and sensitivity to initial value, however it converges slowly. At present large-scale transmission network planning method put a higher and higher demand on solution speed, to meet this demand a chaotic artificial fish swarm algorithm suitable for transmission planning is proposed by integrating artificial fish swarm algorithm with chaotic optimization algorithm, the proposed algorithm inherits the feature of chaotic optimization algorithm, thus during the searching process the artificial fish swarm can escape from local extremum, meanwhile both visual field and swimming step of artificial fish swarm are improved, so the search efficiency is speeded up. The feasibility of the proposed algorithm is verified by calculation results of an 18-bus system and Brazilian South 46-bus system.

#### Keywords:

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通讯作者: 王毕元

#### 作者简介:

作者Email: yuan54111@163.com

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