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电网建设

架空输电线路分裂导线扭转刚度的计算

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摘要：

针对分裂导线扭转的非线性特征，提出了一种新的利用有限元数值模型计算分裂导线扭转刚度的方法。该方法在建模过程中考虑了导线、间隔棒以及塔线连接等因素的影响，可准确计算大变形、大扭转、几何非线性的分裂导线的扭转刚度。算例验证证明了所提出方法的有效性。通过分析分裂导线结构特征、导线覆冰以及分裂导线局部扭转对扭转特性的影响，得到了分裂导线扭转刚度随各种影响因素变化的规律。

关键词：

Calculation of Torsional Stiffness of Bundle Conductors in Overhead Transmission Lines

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Abstract:

According to nonlinear characteristic of the torsion of bundled conductors, a method to calculate the torsional stiffness of bundled conductors by finite element numerical model is proposed. By means of modeling of conductors, spacing rod and connection mode of transmission line with tower, the torsional stiffness of bundled conductors with large deflection, severe torsion and geometrical nonlinearity can be accurately calculated. The effectiveness of the proposed method is verified by calculation example. By means of analyzing structural characteristic of bundled conductors, the impact of ice-coating around conductor on torsion characteristic and the property of local torsion of bundled conductors, the variation law of torsional stiffness of bundled conductors varying with various impacting factors is obtained.

Keywords:

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