

高电压技术

改进电气几何模型法在1000 kV输电线路雷电绕击跳闸率计算中的应用

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摘要:

分析现有3种输电线路雷电绕击计算方法的优缺点, 改进了电气几何模型法。求解雷电流垂直地面入射时击距曲线间的交点坐标; 根据雷电流入射角的变化, 将交点映射到不同的几何空间; 根据实际击距曲线修正交点坐标并求解雷电绕击跳闸率。计算结果表明, 改进电气几何模型法较传统方法计算更为准确。最后, 应用该方法分析了地线保护角和杆塔呼高、中相横担长度、层间距对1 000 kV输电线路雷电绕击跳闸率的影响。

关键词:

Application of Improved Electrical Geometry Model in Calculation of Lightning Shielding Failure-Caused Trip-out Rate of 1 000 kV Power Transmission Line

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Abstract:

Advantages and disadvantages of three existing methods to calculate lightning shielding failure are analyzed. The electrical geometry model method is improved to solve the coordinates of intersection point of striking distance curves while the incident direction of is perpendicular to ground; according to the change of incidence angle of lightning current, then the intersection point is mapped to different geometric spaces; and then based on actual striking distance curves the coordinates of intersection point are modified to solve the trip-out rate due to lightning shielding failure. Calculation results show that the improved electrical geometry model method is more accurate than traditional methods. Finally, applying the improved method the influences of ground wire protection angle, tower height, cross arm length of middle phase and layer space on lightning shielding failure-caused trip-out rate of 1 000 kV power transmission line are analyzed.

Keywords:

收稿日期 2010-05-12 修回日期 2010-07-07 网络版发布日期 2010-09-08

DOI:

基金项目:

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