

## 高电压技术

### 不同海拔地区棒-板间隙临界半径的试验研究

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#### 摘要:

在棒-板间隙的正极性操作冲击放电试验中, 放电电压受到棒端部半径大小的影响。为得到放电电压随棒端部半径变化的规律, 选择棒电极端部为半径19~475mm的球面, 得到2~5m间隙距离下棒-板间隙的放电电压。试验数据表明, 棒端部半径增大到某临界值时, 放电电压开始明显增大, 该临界值称为临界半径。提出新的临界半径计算方法, 并分析临界半径现象产生的原因。为了解不同海拔下棒-板间隙临界半径的变化, 分别在北京(海拔50m)和西藏羊八井(海拔4300m)开展了相同棒-板间隙的临界半径试验研究, 得到两地的临界半径。试验结果表明, 临界半径的大小与棒-板间隙距离和所处海拔有关。

**关键词:** 棒-板间隙 临界半径 高海拔 高电压与绝缘技术

### Experimental Studies on Critical Radius of Rod-Plane Air Gaps at Different Altitudes

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#### Abstract:

During the tests of positive switching impulse discharge voltage of rod-plane air gap, the radius of the end of rod electrode would influences the discharge voltage. To obtain the regularity of discharge voltage varying with the radius of the end of rod electrode, the spherical surface with radii from 19 mm to 475 mm are chosen as the end of the rod electrode to achieve the discharge voltage of rod-plane air gaps while the air gaps are from 2 m to 5 m. Testing data show that when the radius of the end of rod electrode increases to a certain critical value, the discharge voltage starts to increase sharply, so this critical value is called the critical radius of the end of rod electrode. A new method to calculate critical radius is proposed and the reason causing the critical value is analyzed. To investigate the variation of critical radius of rod-plane air gap under different altitudes, the same tests are performed in Beijing whose altitude is 50 m and in Yangbajing located in Tibet whose altitude is 4300 m respectively, and the critical radius of the two places are obtained. Tested results show that the value of critical radius varies with both air gap distances of rod-plane and altitude where the air gap locates.

**Keywords:** rod-plane air gap critical radius high altitude high voltage and insulation technology

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