

电力系统

静止无功补偿器对电压稳定影响的局部分叉分析

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摘要:

静止无功补偿器(static var compensator, SVC)自身动态特性对电压稳定有着重大的影响。提出了一种电压稳定动态分析方法,解决了分割法存在的交接误差问题,并具有满意的计算精度和速度。利用该方法,在不同的失稳模式下,分析了SVC间常数对电压稳定的影响。通过分析发现,当系统单调失稳时,时间常数越大,失稳速度越快;当系统振荡失稳时,时间常数越大,振荡幅度越大。利用双参数延拓法,求取了分叉边界曲线,结果表明,SVC放大倍数越大,分叉边界值也越大。

关键词: 静止无功补偿器 局部分叉 延拓法 电压稳定 平衡解流形 时域仿真

Local Bifurcation Analysis of Influence of SVC on Voltage Stability

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Abstract:

The dynamic characteristic of static var compensator (SVC) its own greatly influences voltage stability of power system. A dynamic analysis method for voltage stability, which remedies the defect of transfer errors in segmentation method and can provide satisfied calculation accuracy and speed, is proposed. Using the proposed method, the influences of time constant of SVC on voltage stability are analyzed under different instability conditions. Analysis results show that when power system loses stability monotonously, the larger the time constant of SVC, the faster the process of losing stability; when power system falls into oscillation instability, the larger the time constant of SVC, the higher the oscillation amplitude as well. The boundary curve of bifurcation is solved by two-parameter continuation, and it shows that the higher the amplification of SVC, the larger the boundary value of bifurcation.

Keywords: static var compensator local bifurcation continuation method voltage stability equilibrium solution manifold time domain simulation

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