

论文

经验模式分解对恒电量瞬态响应的滤波处理

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摘要:

用经验模式分解的方法对恒电量瞬态响应信号进行滤波处理。通过计算机仿真,在模拟等效电路生成的理想瞬态响应信号上加入不同形式的噪声,获得恒电量瞬态响应信号经验模式分解滤波的实际判据。结果表明:将前两项内在模函数(IMF)和IMF4的50 Hz成分(大信噪比时前三项IMF和IMF4的50 Hz成分或直接将前四项IMF)置零在大多数情况下滤波效果很好,将此滤波判据应用于实际腐蚀体系结果较满意。

关键词: 经验模式分解(EMD) 恒电量 内在模函数(IMFs)

EMPIRICAL MODE DECOMPOSITION IN THE DE-NOISING OF COULOSTATICALLY-INDUCED TRANSIENTS

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Abstract:

Empirical mode decomposition technique is applied to noise removal of time-serial data obtained from coulostatically-induced transients (CITs). Different noises are added to the ideal CITs which is obtained by using randle equivalent circuit, and then, the de-noising criterion in practice for CITs using the empirical mode decomposition is obtained. The result indicates that the most effective filtering under most cases should be that IMF1 and IMF2 together with 50 Hz component of the IMF4 were removed. In addition, such a de-noising criterion is also effective when it is applied to a real corrosion system.

Keywords: empirical mode decomposition (EMD) coulostatic intrinsic mode functions (IMFs)

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