



## 混凝土单轴受压本构关系的概率密度描述

### Analysis on Constitutive Law of Plain Concrete Subjected to Uniaxial Compression Probability Density Evolution Method

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中文关键词: [混凝土](#) [随机损伤演化](#) [K-L\(KarhunenLoeve\)分解](#) [密度演化方法](#)

英文关键词: [concrete](#) [stochastic damage evolution](#) [K-L orthogonal decomposition](#) [probability density evolution method](#)

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#### 中文摘要

利用混凝土材料的细观随机损伤物理模型获取混凝土应力—应变关系的概率密度描述. 以细观物理模型为基础, 利用K-L(Karhunen-Loeve)分解方法对任意应变处应力的概率密度函数估计. 将数值计算结果与试验结果进行概率密度层次的对比. 研究证实: 可以采用这一方法描述混凝土

#### 英文摘要

Efforts are made to grasp the probability information of the stress strain relationship. Firstly, a class of mesoscopic damage evolution models is listed to understand the mesoscopic damage evolution characteristics of concrete material. Then the Karhunen-Loeve or the stochastic field mentioned in the former model. Based on the generalized probability density evolution method (PDE), the constitutive relationship in uniaxial loading condition and its evolution are provided. In the end, the comparison between the numerical calculation results and the experimental results is made. It is proved that the probability density evolution process of constitutive relationship for concrete material can be obtained from the