

## 海洋平台桩基的振动台模型试验研究

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**摘要** 通过海洋平台桩基的振动台模型试验, 获得土层振动过程中桩身弯矩和土层中累积孔压的时间过程曲线。进而提出根据土层中孔压的水平, 对静力曲线中的静力进行相应折减, 即乘以不大于1的比例系数, 作为相应孔压水平时桩基侧向承载特性曲线的表征方法。利用该表征方法把试验结果进行了数值模拟, 得到能够反映桩基侧向承载特性的比例系数与土层中相应的孔压比之间的关系, 即: 当土层的孔压比小于0.2时, 比例系数为1; 当土层的孔压比大于等于0.8时, 比例系数为0.1; 当土层的孔压比为0.2~0.8时, 比例系数随孔压比的增加在1和0.1之间线性减小。

**关键词** [岩土工程](#); [海洋平台](#); [孔压](#); [桩](#); [p-y曲线](#); [振动台试验](#)

分类号

## SHAKE TABLE MODEL TEST ON PILE FOUNDATION OF OFFSHORE PLATFORMS

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### Abstract

The time histories of the bending moments along the model pile and accumulated pore pressure in soil are obtained by the shake table model test on pile foundation of offshore platforms. It is proposed that the lateral resistance of the static p-y curves of the pile foundation should be scaled to determine the lateral bearing behavior of the pile according to the level of the pore pressure in soil, that is, the lateral resistance should be multiplied by the scale factor which are less than 1 or equal to 1 according to the level of the pore pressure in soil. The shake table test results are further numerically stimulated using the scale factor method. And the relationship between the scale factor and the pore pressure ratio in soil is obtained: when the pore pressure ratio in soil  $< 0.2$ , the scale factor = 1; when the pore pressure ratio in soil  $\geq 0.8$ , the scale factor = 0.1; when the pore pressure ratio in soil  $> 0.2$  and  $< 0.8$ , the scale factor decreases linearly from 1 to 0.1 with the increase of the pore pressure ratio.

**Key words** [geotechnical engineering](#); [offshore platform](#); [pore pressure](#); [pile](#); [p-y curve](#); [shake table test](#)

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