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# 动荷作用下饱和尾矿砂的孔压和残余应变演化特性

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**摘要** 在不同固结状态下对饱和尾矿砂进行动三轴试验, 探讨饱和尾矿砂的动孔压和动残余应变发展特性。试验结果表明: (1) 动应力、固结围压变化对饱和尾矿砂的孔压增长曲线基本上没有影响, 固结应力比变化对其有较明显的影响。(2) 均压固结和偏压固结时孔压增长曲线形态不同。均压固结时, 可用修正后的Seed应力孔压模型表达式来描述; 偏压固结时, 可用指数函数来模拟。(3) 在均压固结和偏压固结条件下饱和尾矿砂均产生较大的残余应变。固结围压、动应力变化对残余应变增长曲线基本上没有影响, 固结应力比对其有明显的影响。(4) 残余应变增长曲线在均压固结和偏压固结时具有明显不同的形态。均压固结时, 可用反正弦函数来描述; 偏压固结时, 可用幂函数来模拟。

**关键词** [土力学](#); [尾矿砂](#); [动三轴试验](#); [动孔压](#); [动残余应变](#)

分类号

## DEVELOPING CHARACTERISTICS OF PORE WATER PRESSURE AND RESIDUAL DEFORMATION OF TAILINGS SANDS UNDER CYCLIC LOAD

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### Abstract

Based on dynamic triaxial tests conducted on tailings sands under different consolidation conditions, the developing characteristics of dynamic pore water pressure and residual deformation of tailings sand are studied. It is indicated that: (1) The relationship between pore water pressure ratio and cyclic times ratio is affected by the variation of confining pressure and dynamic stress very little, but it is influenced by consolidation stress ratio. (2) The curve shape of pore water pressure developing under isotropic consolidation is not the same as that under anisotropic consolidations. The relationship of pore water pressure ratio and cyclic times ratio could be described by modified Seed's dynamic pore water pressure model under isotropic consolidations, but by exponential function under anisotropic consolidations. (3) The great residual strain is generated under not only anisotropic but also isotropic consolidation. The relationship between residual strain ratio and cyclic times ratio. is not influenced too much by the variation of confining pressure or dynamic stress, but influenced by the consolidation stress ratio. (4) The curve shape of residual strain developing under isotropic consolidation is not the same as that under anisotropic consolidations. The relationship of residual strain ratio and cyclic times ratio could be described by arcsine function under isotropic consolidations, and by power function under anisotropic consolidations.

**Key words** [soil mechanics](#); [tailings sands](#); [dynamic triaxial test](#); [dynamic pore water pressure](#); [dynamic residual strain](#)

