

综述评论

冻土力学的研究进展与思考

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摘要 从冻结土的宏观力学性质, 正冻土中的水、热迁移理论, 正冻土的水热力耦合模型四个方面分析综述了国内外冻土力学的发展历史、研究现状与我国冻土力学研究中存在的问题, 指出: (1) 当前冻土力学的研究内容应该从对冻结土的宏观强度与变形性质向更切合实际工程需要的正冻土、正融土微、细观热、力学耦合性质方面深化; (2) 冻土力学的研究思路应该从对土样纯力学量的试验研究向土样组构、级配、含水量、饱和度等土性指标在不同负温下对土样颗粒排列与胶结特性的强度、变形影响机理方面转移; (3) 冻土力学的研究对象也应该从室内冻结试验的研究向具有各种不同水热交换边界条件与水热迁移内在规律的冻土体发展。

关键词 [冻土力学](#) [水热迁移](#) [水热力耦合模型](#) [正冻土](#) [正融土](#)

分类号

THE ADVANCE AND REVIEW ON FROZEN SOIL MECHANICS

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Abstract

The recent advances in frozen soil mechanics are demonstrated and discussed from four aspects: (1) Test studies on the mechanical properties of the frozen soil; (2) Heat conductivity properties of the mixture materials of the freezing soil; (3) Water migration behaviors in the freezing soil; and (4) The Heat-Moisture-Deformation Coupling Models. A discussion on above four areas is made for further researches, and suggestions are offered as follows: (a) The research should be transferred from the deformation and strength properties of the frozen soil to the heat and moisture migration behaviors of the freezing and thawing soil, which is often important in engineering. (b) More attentions should be paid to the field tests with complex water and heat boundaries, instead of the lab tests with very simple boundaries. (c) The structure and grade size distribution of the frozen soil should be considered in the further test studies.

Key words [frozen soil mechanics](#) [moisture and heat migration](#) [heat-moisture-deformation coupling model](#) [freezing soil](#) [thawing soil](#)

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