

裂隙岩体地区导热 - 对流型温度场垂向渗透系数的计算及分布特征研究

刘长吉¹, 陈建生¹, 白兰兰¹, 董海洲², 陈亮¹

(1. 河海大学 岩土工程研究所, 江苏 南京 210098; 2. 河海大学 科学研究院, 江苏 南京 210098)

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摘要 阐述应用温度场方法研究裂隙岩体地区地下水渗流场参数的优点和存在垂向流作用下的导热 - 对流型温度场的地温特征。基于含水层导热 - 对流型温度场的地温曲线和渗流连续性方程, 考虑受垂向流影响的温度场, 建立地温与深度之间的函数关系, 并建立不动点迭代方程, 编制程序计算垂向渗透系数。针对渗透系数计算结果的统计特征分别构造满足正态分布、对数正态分布和均匀分布的3组新样本, 构造减速膨胀曲线, 对比分析渗透系数的概率分布特征。结果表明, 同正态分布和均匀分布相比, 裂隙岩体地区的垂向渗透系数更接近对数正态分布。利用温度场方法和统计学方法研究裂隙岩体地区地下水渗流场参数, 如渗透系数, 具有避免过多主、客观因素干扰, 计算过程清晰, 结果明确的特点。

关键词 [岩石力学](#); [渗透系数](#); [导热 - 对流型温度场](#); [减速膨胀曲线](#); [统计分布特征](#)

分类号

STUDY ON CALCULATION AND DISTRIBUTION CHARACTERISTIC OF VERTICAL PERMEABILITY COEFFICIENT WITHIN CONDUCTION-CONVECTION TEMPERATURE FIELD IN FISSURED ROCK ZONE

LIU Changji¹, CHEN Jiansheng¹, BAI Lanlan¹, DONG Haizhou², CHEN Liang¹

(1. Institute of Geotechnical Engineering, Hohai University, Nanjing, Jiangsu 210098, China;
2. Research Academy of Science and Technology, Hohai University, Nanjing, Jiangsu 210098, China)

Abstract

The advantages with the use of the temperature field method to study the parameters of groundwater seepage field and the temperature characteristic of conduction-convection temperature field affected by vertical seepage are described briefly. According to the temperature characteristic curve of conduction-convection temperature field in aquifer and seepage filtration equations, the function relationship between temperature and depth is formed, considering the characteristic of temperature field affected by vertical seepage; and the vertical permeability coefficient is calculated via iterative equation and program. Based on the statistical characteristics of above results, a few samples following the normal distribution, the log-normal distribution and the uniform distribution are created respectively. Then, the model of evanescent expander-curve is presented; and the statistical characteristics of the vertical permeability coefficient and the three kinds of distributions are studied and contrasted. The results show that the probability distribution characteristic of the vertical permeability coefficient in fissured rock zone is much close to the log-normal distribution. Several complicated factors including subjective and objective ones can be avoided; and the process and analysis results are clear using the method of temperature field and statistics to study the parameters of groundwater seepage field such as the vertical permeability coefficient in fissured rock zone.

Key words [rock mechanics](#); [permeability coefficient](#); [conduction-convection temperature field](#); [evanescent expander-curve](#); [statistical distribution](#)

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