

学术探讨

地铁站楼梯行人流交通特征的数据拟合分析

柳伍生, 余朝玮

同济大学 交通运输工程学院, 上海 201804

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摘要 随着中国城市化水平的不断提高,行人在整个城市交通体系中的影响越来越大,越来越多的研究开始关注行人交通。但目前国内外对行人交通的研究都集中在水平步道上,尚没有对楼梯的行人流特征的研究,特别是缺少对大城市重要人流重要集散地的步行楼梯行人流特征的分析研究。通过对上海市赤峰路轻轨车站、上海人民广场地铁站和上海火车站地铁站等几个重要的行人集散地的楼梯行人流的特征调查,以定性分析为基础得到楼梯行人流的密度-速度、密度-流率的函数关系类型,并采用Matlab等软件进行函数拟合,得到换乘枢纽的行人流特征函数及楼梯行人流特征模型。为合理设置换乘枢纽内楼梯设施,提高楼梯的通行能力,更好组织行人流提供依据。

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分类号

Analyzing to characteristics of pedestrians flow on stairways at metro transfer stations basing on data fitting

LIU Wu-sheng, YU Chao-wei

School of Traffic and Transportation Engineering, Tongji University, Shanghai 201804, China

Abstract

Along with the rapidly increasing urban population, more and more researches focus on the pedestrians flow. However, the current domestic and international researches on pedestrians flow is mainly concentrated on pedestrians flow on walkways, few researchers study on the characteristics of pedestrians flow on stairways in some significant distributing centers. In this thesis, by the investigation to the characteristics of pedestrians flow on stairways in some main pedestrians distributing centers, such as the Shanghai Chifeng Road light orbit station, Shanghai People's Square subway station and the Shanghai train station and so on, and on the basis of the investigation data above, free flow density and jam density of pedestrians flow on stairways are made certain. And the form of function about density-velocity and density-flow rate of pedestrians flow on stairways is confirmed, then fitting functions in term of investigation data and ensuring parameters by using software, such as Matlab, thus the functions of pedestrians flow in transfer stations are gained. By comparing vehicles flow to pedestrians flow on stairways, pedestrians flow on the walkways to pedestrians flow on stairways, the foreign related researches to this thesis' research, the models of pedestrians flow on stairways are suitable for transfer stations in some big cities in china. It will offer references and directions for improving capacity of stairways, and organizing effectively pedestrians flow.

Key words [metro transfer station](#) [pedestrian stairway](#) [pedestrian flow](#) [data fitting](#) [characteristic analyses](#)

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通讯作者 柳伍生 lwusheng@163.com

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