



## 论文摘要

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ZHONGNAN DAXUE XUEBAO(ZIRAN KEXUE BAN)

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## 水泥沥青砂浆劣化对板式轨道动力学性能的影响

向 俊, 赫 丹, 曾庆元

(中南大学 土木建筑学院, 湖南 长沙, 410075)

**摘要:** 基于高速列车-板式轨道系统空间振动分析理论, 研究板式轨道水泥沥青砂浆(CAM)填充层的劣化(如脱层、开裂、脆化与碎裂等)引起的轨道板悬空现象对板式轨道振动响应的影响。研究表明: 与CAM正常工作状态相比, CAM劣化造成轨道板悬空, 从而引起轨道板加速度增大10多倍, 位移增大20多倍; 钢轨对轨道板的压力急剧增大, 且出现拉力现象; 随着速度的提高, 系统其他动力响应值也迅速增大。故在板式轨道养护维修中, 应严格控制CAM病害。

**关键字:** 板式轨道; 水泥沥青砂浆; 高速列车; 劣化; 振动

## Effect of cement asphalt mortar disease on dynamic performance of slab track

XIANG Jun, HE Dan, ZENG Qing-yuan

(School of Civil and Architectural Engineering, Central South University, Changsha 410075, China)

**Abstract:** According to the analysis theory of spatial vibration of high-speed train and slab track system, the effect of voided slab induced by deteriorations of cement asphalt mortar (CAM) layer, such as delamination, cracking, embrittlement and cataclasm, etc, on vibration responses of the slab track was studied. The results show that, compared to the normal work condition of the CAM, the slab accelerations increase by ten times and the slab displacements increase by twenty times during the action of the voided slab induced by the CAM deterioration. The pressures between rails and slabs increase rapidly and the tensile forces appear. With the increase of velocity, the other dynamic responses of the system increase rapidly. Thus, the CAM deteriorations should be strictly controlled during the slab track maintenance.

**Key words:** slab track; cement asphalt mortar; high-speed train; deterioration; vibration

电话： 0731-88879765 传真： 0731-88877727

电子邮箱： [zngdxb@mail.csu.edu.cn](mailto:zngdxb@mail.csu.edu.cn) 湘ICP备09001153号