

论文

棒在颗粒物质中穿行时摩擦振荡行为的研究

吴宇<sup>1</sup>, 胡林<sup>1</sup>, 曲东升<sup>1</sup>, 汤燕<sup>1</sup>, 张忠政<sup>1</sup>, 杜学能<sup>2</sup>, 许锋<sup>1</sup>

1. 贵州大学理学院, 贵州省光电子技术与应用重点实验室, 贵州贵阳550025; 2. 铜仁学院物理系, 贵州铜仁554300

摘要:

实验发现, 棒在颗粒物质中运动时滑动摩擦力具有准周期振荡性质. 根据颗粒物质的剪胀性对此现象进行了研究, 提出相应的物理模型, 建立了平均体积分数振荡方程和滑动摩擦力振荡变化关系式, 理论计算分析结果与实验结果基本吻合.

关键词: 滑动摩擦力 剪胀性 有效区域 平均体积分数

The oscillatory friction of rod in the sliding course of granular materials

WU Yu<sup>1</sup>, HU Lin<sup>1</sup>, QU Dong-sheng<sup>1</sup>, TANG Yan<sup>1</sup>, ZHANG Zhong-zheng<sup>1</sup>, DU Xue-neng<sup>2</sup> and XU Feng<sup>1</sup>

1. Laboratory for Photoelectric Technology and Application of Department of Physics, Guizhou Univ., Guiyang 550025, Guizhou, China; 2. Department of Physics, Tongren Institute, Tongren 554300, Guizhou, China

Abstract:

It is found that sliding friction between continuous medium and granular materials has a novel speciality of quasi-periods oscillatory. According to the shearing dilatancy of granular materials, this novel phenomenon is studied. A physical model is proposed to explain the experimental results and presents an equation about average density oscillating in the effective region. In addition, a function about sliding friction is elicited. The theoretical results accord well with the experimental results.

Keywords: sliding friction characteristic of shear dilatancy effective region average fraction of the total volume

收稿日期 2007-01-12 修回日期 1900-01-01 网络版发布日期 2006-10-24

DOI:

基金项目:

通讯作者: 吴宇

作者简介:

本刊中的类似文章

扩展功能

本文信息

Supporting info

PDF(275KB)

[HTML全文](OKB)

参考文献[PDF]

参考文献

服务与反馈

把本文推荐给朋友

加入我的书架

加入引用管理器

引用本文

Email Alert

文章反馈

浏览反馈信息

本文关键词相关文章

▶ 滑动摩擦力

▶ 剪胀性

▶ 有效区域

▶ 平均体积分数

本文作者相关文章

▶ 吴宇

▶ 胡林

▶ 曲东升

▶ 汤燕

▶ 张忠政

▶ 杜学能

▶ 许锋