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湿式多盘制动器时变不确定性优化设计方法

Optimal design method with time-varying uncertainty for wet multi-disc brakes

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英文关键词: [optimal design](#) [vehicles](#) [braking](#) [reliability](#) [uncertainty](#) [time-dependent](#) [wet multi-disc brakes](#)

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中文摘要:

针对湿式多盘制动器在使用过程中受温度、磨损等随时间变化的不确定性因素影响,从而导致其制动性能下降的问题,该文建立了基于时变不确定性的多盘制动器优化设计数学模型,提出了一种基于不确定性因素的多盘制动器时变设计方法,并探索性地将其应用到制动器优化设计中,结果表明:利用该方法可以设计出任意时刻满足可靠度要求的制动器,为制动器可靠性动态安全评价提供了一种新方法,具有实际的工程意义。

英文摘要:

As uncertainties inherent factors, such as temperature and wear, always exist during wet multi-disc brake's lifetime, a time-dependent model was established, which incorporating such uncertainties based on stochastic differential equation theory. The time-dependent design method for wet multi-disc brake under such external uncertainties factors was presented. This method takes the braking distance and temperature changes with time into account. It can evaluate dynamic security reliability for wet multi-disc brake products, which reflects the impact of time scale in the design. The brake that can meet the reliability requirements at any time can be designed by the new method, which can provide a reference for dynamic security assessment of brakes reliability.

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