

# 京津城际铁路的接触网研究

## 中文摘要

随着高速列车的不断发展，速度也越来越快，为保证列车的安全运行，对接触网的可靠性要求越来越高，在保证持续供电的同时也要确保列车运行的安全。因此对接触网的可靠性进行研究和分析是必不可少的一步，也对今后接触网的维护维修工作做出巨大的贡献。研究接触网的失效机理提高列车运行的可靠性，保证列车正常运行有着十分重要的意义。

接触网作为高速铁路列车的主要组成部分之一，是重点的研究对象。本文主要对接触网的各个部分进行简要介绍，分析产生故障的原因以及解决办法，对可靠性这一概念进行说明，介绍故障树分析法和贝叶斯网络分析法，对京津城际铁路的接触网部件进行研究，再详细运用故障树分析法对京津城际铁路进行定性分析和定量分析，计算得出京津铁路可靠性并提出提高可靠性的相关措施。其研究成果对京津城际铁路的运营维护有指导作用，也对铁路接触网的发展有一定的意义。

## 英文摘要

With the continuous development of high-speed train, the speed is also faster and faster. In order to ensure the safe operation of the train, the reliability of the catenary is required to be higher and higher. It is necessary to ensure the safety of the train operation while ensuring the continuous power supply. Therefore, it is an essential step to study and analyze the reliability of OCS, and also make a great contribution to the maintenance work of OCS in the future. It is very important to study the failure mechanism of catenary to improve the reliability of train operation and ensure the normal operation of train.

As one of the main components of high-speed railway train, catenary is the key research object. This paper mainly introduces each part of OCS, analyzes the causes of faults and solutions, explains the concept of reliability, introduces fault tree analysis and Bayesian network analysis, studies OCS components of Beijing Tianjin Intercity Railway, and then makes qualitative and quantitative analysis of Beijing Tianjin Intercity Railway by using fault tree analysis in detail. The reliability of Beijing Tianjin railway is calculated and the relevant measures to improve the reliability are put forward. The research results have a guiding role for the operation and maintenance of Beijing Tianjin Intercity Railway, and also have a certain significance for the development of railway catenary.

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