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Sommario/riassunto

This book highlights a theoretical framework for architecting the safety and reliability analysis of rail transit trains for active safety assurance. Rail transit is compared to the main artery of regional economy and the backbone of urban travel. The safety and reliability of trains is directly associated with the punctuality and safety of passengers, as well as the transport capacity and efficiency of rail transit. High-intensity operation, complex working conditions, and external random interference have brought new challenges to the effective analysis of the safety and reliability of rail transit trains. The book provides a timely solution to the challenges by providing a theoretical framework that can improve the capacities of systematic, real-time, predictive reliability analysis, and enable it to guide the condition-based repair, operation and maintenance means. The book systematically covers topics including the train operation risk analysis methods, health identification and real-time reliability analysis of key train components, and the polymorphic reliability evaluation and the optimization methods of multi-component condition-based maintenance decision for train systems. It also conducts an in-depth discussion on new advances in safety assurance and health management of rail transit trains. The book can be used as a theoretical reference for postgraduate students in related majors and as a valuable handbook for engineers and technicians working on rail transit trains.