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THE APPLICATION PROSPECT OF RISK QUANTITATIVE ASSESSMENT IN CHINESE SPACE STATION AT BIG DATE ERA

Abstract

With the development of science and technology, China has entered the era of big data. Because of the high reliability, long life and high cost, it is difficult to get enough data for some special products. At this time we must introduce the concept of small sample data analysis.The design objective of the future space station in China is to establish a large manned spacecraft which can meet the long-term on orbit mission of the astronauts,and is more close to the multi functional, integrated and complex.The risk control and quantitative analysis of the space station will directly affect the life safety of the astronauts and the success or failure of the mission, and alsorelated to China's international image as a space power. This paper investigates the probabilistic risk assessment work of NASA's manned lunar landing, international space station, space shuttle and other manned space program. At the same time, this papercompares and analyzes the application effect of risk assessment methods in different manned space projects and focuses on the research progress in the field of spacecraft risk assessment in China and abroad. Combined with the project background of our existing space stationthis paper expounds the practical significance of quantitative risk assessment for the construction and operation of the existing space stations in China and the method of small sample system evaluation is put forward in the quantitative risk assessment of space station in order to adapt to the new characteristics of China's manned space mission and effectively support the quantitative risk assessment of the space station. On this basis, according to the engineering characteristics of China's space station,the space station quantitative risk assessment scheme and research ideas are preliminary proposed.This paper analyzes the existing problems in the application of this method in our space station and also puts forward some suggestions on the method specification and data collection to provide technical support for small sample quantitative risk assessment in China's space station. Finally, the advantages and disadvantages of various fuzzy algorithms applied to the space station risk assessment are analyzed.