

SPACE EXPLORATION SYMPOSIUM (A3)
Space Exploration Overview (1)

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EVOLUTION OF THE DEEP SPACE IN SITU COMMUNICATION NETWORK

Abstract

Deep space exploration techniques have attracted all over the world. Deep space in situ communication network is the important part of the deep space communication network, and is impartibility of the deep space missions. Firstly, this paper puts forward the concept of the deep space in situ communication network, and discusses the application of it in spaceflight missions (researching the development of the deep space in situ communication network in Apollo plans, Lunar Outpost plans, Mars Exploration and so on). Secondly, the paper summarizes previous techniques of communication and navigation in deep space exploration and makes some compare, and chooses the right methods of communication and navigation that can be used in constructing the deep space in situ communication network in lunar exploration in view of lunar environments. Finally, the paper introduces the development of the deep space in situ communication techniques of Lunar and Mars and the frame, key techniques, transport protocols and so on of the deep space in situ communication network of Mars, and detailedly describes NASA's in situ Lunar network for analyzing the construction of the deep space in situ communication network and indicating the way of evolution of the deep space in situ communication network.