

SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
Near-Earth and Interplanetary Communications (6)

Author: Mr. wei zheng
China Academy of Space Technology (CAST), China

A DISCUSSION ON FIBER OPTIC COMMUNICATION AND WIDE BAND INTERNET IN SPACE

Abstract

As the growth of space tasks, high-resolution images or data from payloads such as remote sensors, aperture radars, and video and voice data from astronauts activities will require broad band system to support. With the advantages of wide band, light weight, excellent EMC/EMI performance etc, fiber will be the first choice for the transmission medium in satellites or spacecrafts. Although fiber would suffer radiation effects in space, a great deal of experimentation have proved its availability in space applications. At present, fiber is formly used in space, especially in the international spacestation (ISS). High speed local area networks based on fiber is a technical trend in the development of spacecraft's information system FDDI ,MIL-STD-1773, FODB, SpaceFibre, and Gigabit Ethernet, are the high speed buses used in satellites or spacecrafts, to form high speed satellite Intranet. At the same time, free space optics (FSO) is an optical communication technology that uses light propagating in free space to transmit data between two points. High speed optical communication networks could be constructed between satellites by using FSO. For example, the optical links between three GEO satellites would realize global coverage of optical communications in the world. And it can form an optical network in the space. Nowadays, space optical communication technology is becoming more and more useful. Rad-hard components such as fiber cable, connectors, transceivers ,SerDes (Serializer and Deserializer) , FPGAs, and communication protocols, such as CCSDS are becoming maturing. In addition, optical network could increase user capacity , therefore reduce the user' cost. In this paper, the avaiability of fiber optic commnication and wide band internet in space is discussed. Maybe in the future, a high speed optical internet, constructed by statellite loacal optical LAN and FSO links between satellites, would bring greatly expanded informantion space for human society. More and more users could enjoy broadband Internet to bring information to facilitate human.