Future Spacecraft Propulsion Systems



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In this second edition of Future Spacecraft Propulsion Systems, the authors demonstrate the need to break free from the old established concepts of expendable rockets, using chemical propulsion, and to develop new breeds of launch vehicle capable of both launching payloads into orbit at a dramatically reduced cost and for sustained operations in low-Earth orbit. The next steps to establishing a permanent a presencea (TM) in the Solar System beyond Earth are the commercialisation of sustained operations on the Moon and the development of advanced nuclear or high-energy space propulsion systems for Solar System exploration out to the boundary of interstellar space. In the future, high-energy particle research facilities may one day yield a very high-energy propulsion system that will take us to the nearby stars, or even beyond. Space is not quiet: it is a continuous series of nuclear explosions that

provide the material for new star systems to form and provide the challenge to explore. This book provides an assessment of the industrial capability required to construct and operate the necessary spacecraft. Time and distance communication and control limitations impose robotic constraints. Space environments restrict human sustained presence and put high demands on electronic, control and materials systems. This comprehensive and authoritative book puts spacecraft propulsion systems in perspective, from earth orbit launchers to astronomical/space exploration vehicles. It includes new material on fusion propulsion, new figures and updates and expands the information given in the first edition.

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