

IAF SPACE EXPLORATION SYMPOSIUM (A3)  
Mars Exploration – missions current and future (3A)Author: Mr. Debarshi Mukherjee  
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## MARS EXPLORATION: CURRENT AND FUTURE MISSIONS

**Abstract**

Mars, the fourth planet from the sun, has been a subject of fascination and intrigue for centuries. In recent years, Mars exploration has become a major focus of space agencies around the world. The goal of these missions is to gain a better understanding of the red planet, its geology, and its potential to support human life. This research abstract provides an overview of the current and future Mars exploration missions. Currently, there are several missions underway to explore Mars. The most recent is the Mars 2020 mission, launched by NASA in July 2020. The mission's primary objective is to search for signs of ancient microbial life on Mars. It also aims to collect and store rock and soil samples that will be returned to Earth by a future mission. The Mars 2020 mission includes the Perseverance rover, which has several instruments and cameras onboard to collect data about the Martian environment and geology. Another active Mars mission is the United Arab Emirates' Hope mission, launched in July 2020. The mission is designed to study the Martian atmosphere and climate, with a focus on understanding the planet's weather patterns and how they affect its climate over time. In addition to these current missions, there are several planned future missions to Mars. One of the most anticipated is NASA's Mars Sample Return mission, which is set to launch in the mid-2020s. This mission will use a series of robots and landers to collect rock and soil samples from the Martian surface, which will be returned to Earth for analysis. Other planned missions include the European Space Agency's ExoMars mission, which is set to launch in 2022. The mission includes a rover and a surface science platform, both of which will study the Martian surface and subsurface to search for signs of life. In conclusion, Mars exploration is a rapidly growing area of interest for space agencies around the world. The current and future missions are designed to uncover more information about the red planet's geology, climate, and potential to support life. These missions are laying the groundwork for future human missions to Mars, which could become a reality in the next decade or two. As we continue to explore Mars, we will undoubtedly learn more about our neighboring planet and the history of our solar system.