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Mars Exploration – missions current and future (3A)

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# NEW METHODS FOR MARTIAN EXPLORATION

**Abstract**

This paper provides an overview of previous and current missions to Mars with a focus on improving systems and solving problems caused during missions.

Part 1, Past and Current Mars Missions

The missions to Mars in the past, such as the Viking missions in the 1970s, the Mars Pathfinder mission in 1997, and the Mars Exploration Rover missions in the 2000s, are summarized in this part. It goes over the scientific findings made by these expeditions, including proof of water on Mars and the planet's geological past. Also a summary of the current Mars missions is given in this part, including the Mars Science Laboratory mission, which in 2012 successfully landed the Curiosity rover on Mars, and the Mars 2020 mission , which landed the Perseverance rover on Mars to look for signs of ancient life,and the Mars Atmosphere and Volatile Evolution (MAVEN) mission, which is researching the Martian atmosphere.

Part 2, Problems of Curiosity Mission The Curiosity Mars rover mission has faced several technical, operational, and environmental challenges since its landing on Mars in 2012. Technical issues included problems with the wheels, drill, and communication system, while operational challenges involved conducting experiments and planning rover movements several days in advance. Despite these obstacles, the mission has achieved numerous scientific milestones and provided valuable insights into robotic exploration of other planets.

Part 3, Some Solutions to Problems on Curiosity Mission Changing the drill design: Developing a more robust and durable drill construction that takes into account the conditions on Mars. For example, materials that are better suited to extreme temperatures and vibration could be used. Using new technologies: For example, using a laser drill that can quickly and accurately cut rock and soil samples without wearing out the parts. Developing drill autonomy: Creating a more autonomous drill control system that allows it to work independently without constant operator control. Improving the sample collection and processing system. Changing wheel types for more work time.

Conclusion The significance of Mars missions for scientific research and technological development is emphasized in this paper's conclusion. It makes the case that continuing to fund Martian missions will improve society by introducing new resources and technologies in addition to deepening our knowledge of the Red Planet.