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Celestial Army (Telecommunication Over Mars)

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Abstract:

TELECOMMUNICATION OVER MARTIAN SURFACE also would have released a small satellite – a sphere the size of a soccer ball. TOM would have tracked that device as it orbited Mars. The robot Mars Sample Return mission would collect and bring Mars rocks back to Earth. Successful retrieval of those samples would depend on such an orbiting spacecraft to accurately track and intercept the sample container launched from the martian surface. TOM's tracking of its small satellite would have demonstrated such a capability. TELECOMMUNICATION OVER MARTIAN SURFACE will be the first spacecraft to travel to another planet for the primary purpose of relaying communications to and from Earth. In fact, it will serve as a Mars communications hub for a growing interplanetary Internet. Rovers, science stations, and orbiting spacecraft will all communicate with Earth by sending and receiving signals via the TELECOMMUNICATION OVER MARTIAN SURFACE. The spacecraft will be in contact with Earth almost around the clock, because its orbit will place it 20 times farther from the planet's surface than other spacecraft, meaning it will nearly always have a direct line of sight to Earth. The TOM will fly above the surface of Mars at a distance of 5,000 kilometers (3,000 miles). Besides sending and receiving communications at radio and microwave frequencies, the TELECOMMUNICATION OVER MARTIAN SURFACE will pioneer the use of lasers for planet-to-planet communications. These lasers will transmit and receive signals using near infrared light - just beyond the range of the electromagnetic spectrum seen by the human eye. The signals will travel tens of millions of miles through space. Though optical communications are more susceptible to interference from clouds, they have the potential to transmit 10,000 times as much data as microwave communications.

References:

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