SOLAR SAIL PROPULSION FOR SATELLITES

BY

THIRU VENKAT R

CAMBRIDGE INSTITUTE OF TECHNOLOGY, INDIA

WHAT IS A SATELLITE?

SATELLITE

A satellite or artificial satellite is an object, typically a spacecraft, placed into orbit around a celestial body

HISTORICAL SIGNIFICANCE

The first artificial satellite, Sputnik 1, was launched in 1957 by the Soviet Union, marking a monumental achievement in space exploration.

PROPULSION SYSTEM

WHAT IS PROPULSION SYSTEM?

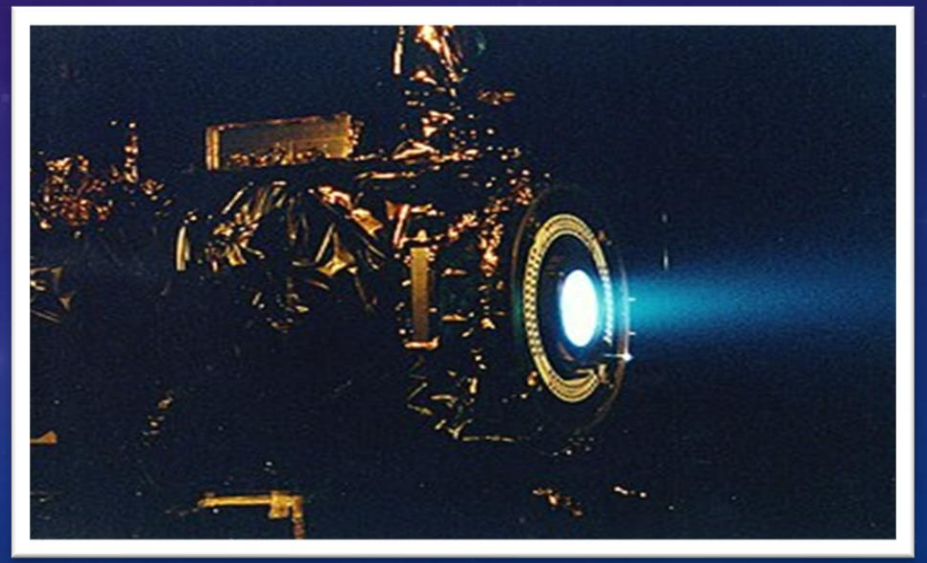
Spacecraft propulsion is any method used to accelerate spacecraft and artificial satellites

VARIOUS TYPES OF PROPULSION SYSTEM

- CHEMICAL PROPULSION SYSTEM
- ELECTRIC PROPULSION SYSTEM
- OTHER PROPULSION SYSTEM

CHEMICAL PROPULSION SYSTEM

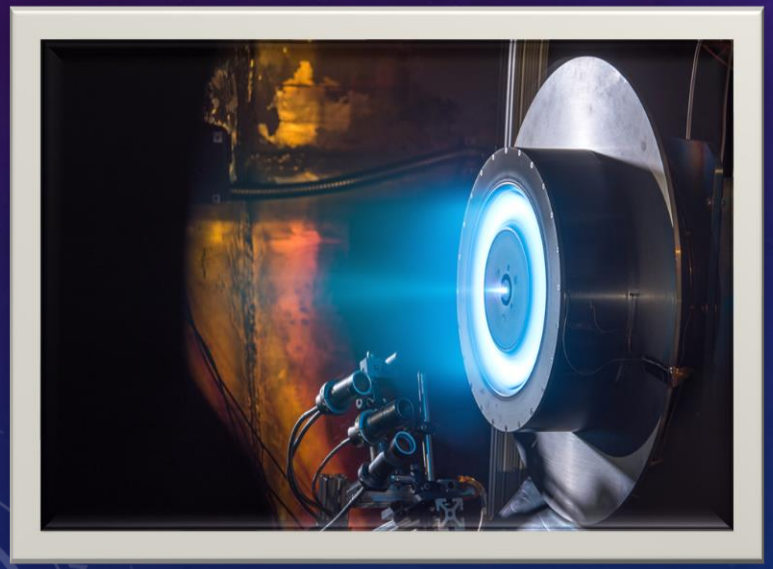
A large fraction of the rocket engines in use today are chemical rocket for example, hydrazine, liquid oxygen, liquid hydrogen, nitrous oxide, and hydrogen peroxide



ELECTRICAL PROPULSION SYSTEM

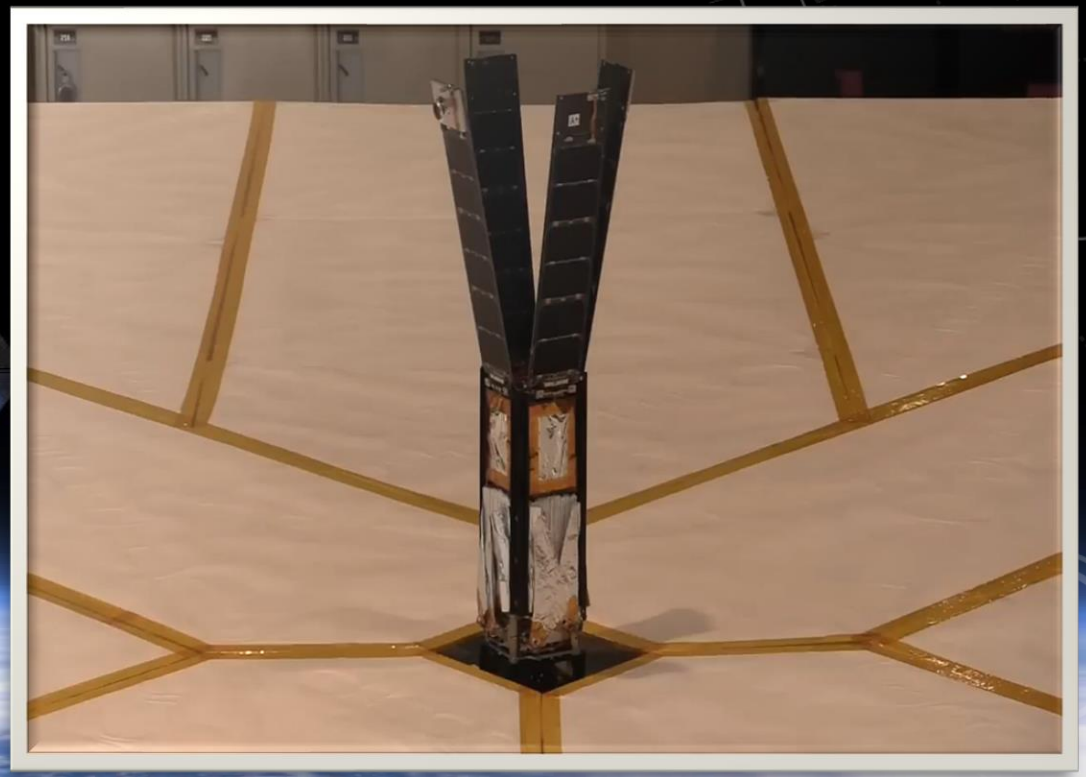
Electric propulsion is commonly used to keep commercial communications satellites

Such an engine typically uses electric power, first to ionize atoms, and then to create a voltage gradient to accelerate the ions to high exhaust velocities

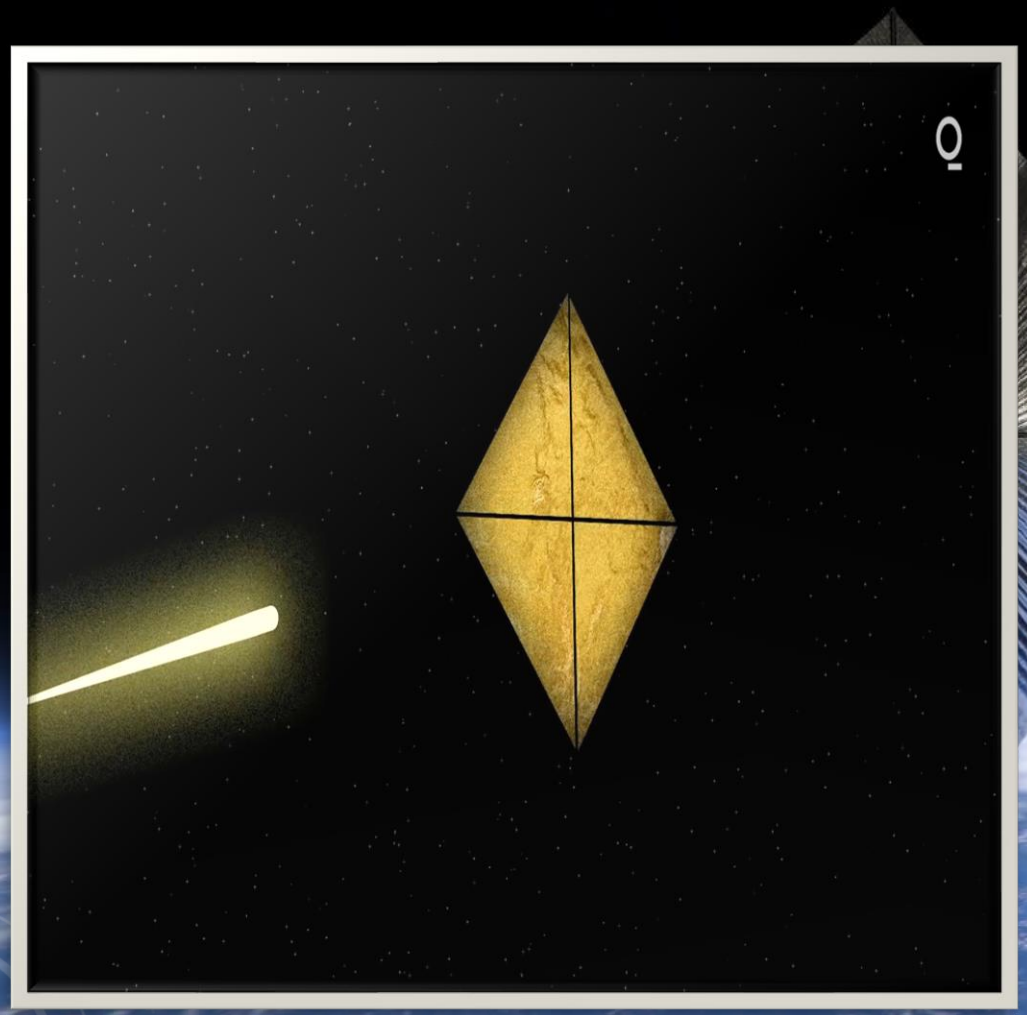


SOLAR SAIL METHOD

Solar sail technology, a vision, embraces the unique concept of utilizing sunlight pressure for propulsion in deep space exploration.



SOLAR SAIL METHOD



DISADVANTAGES OF TRADITIONAL SYSTEMS

CHEMICAL SYSTEM

- Limited Fuel
- Fuel Depletion
- Toxic and Hazardous

ELECTRIC SYSTEM

- Lower Thrust
- Power Source Dependence
- Complexity

SOLAR SAIL SYSTEM

- Lower Thrust
- Dependence on Sun

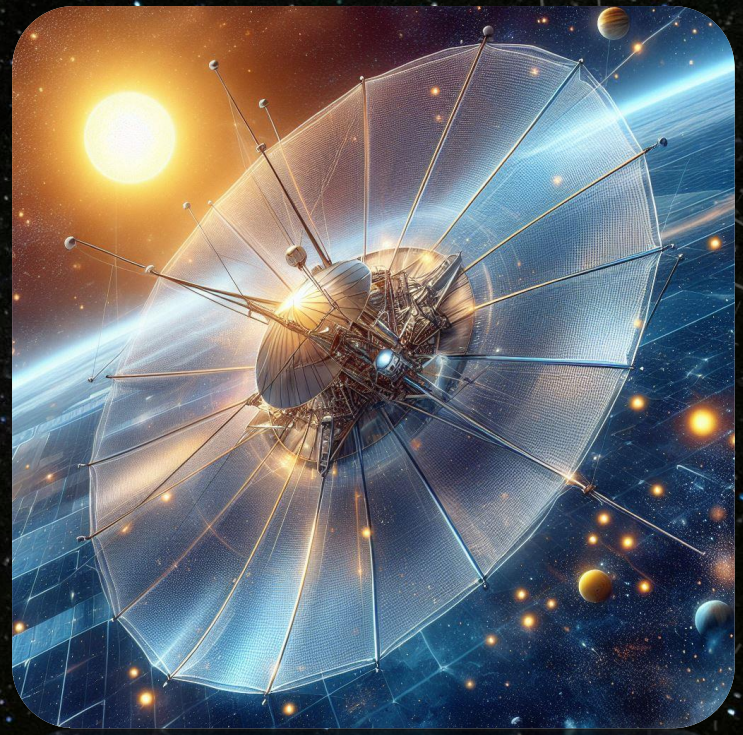
PROPOSED METHOD

SOURCE:AI GENERATED IMAGE

- Photon Capture
- Thrust Generation
- Control and Optimization
- Thrust Direction
- Continuous Operation

ADVANTAGES OF ADVANCED SOLAR SAIL SYSTEM:

- Sustainable Propulsion
- Long-term Efficiency
- Lightweight Innovation
- Low-cost



SOURCE:AI GENERATED IMAGE

Q/A??