

Non-Human and Human Transport to Mars: by MARS- plus EUROPA-INPPS Flagship Missions including High Mass Science Payload



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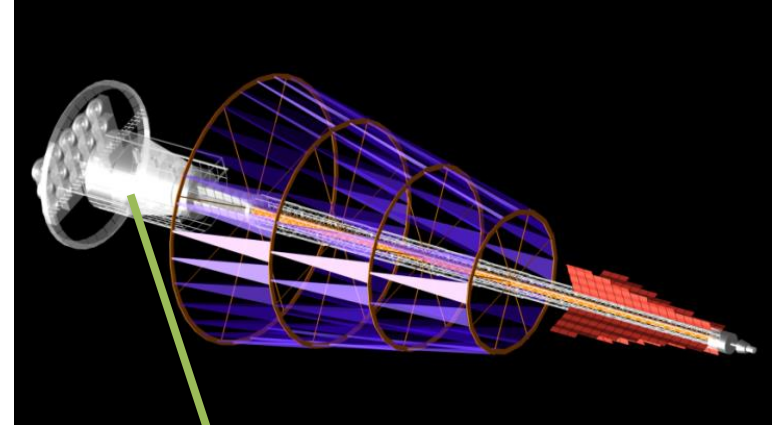
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MARS- and EUROPA- NPPS (International Nuclear Power and Propulsion System, 2020): payload - 20t MARS and 11t EUROPA!

Knowledge for Tomorrow

Non-Human and Human Transport to Mars: MARS- plus EUROPA-INPPS Flagship

Summary Status INPPS Flagship:

- Nuclear Electric Propulsion (DEMOCRITOS project and more): Russian 1MWeI core, European/Russian subsystems, contributions - Brazil, Japan and USA,
- 1992 UN principles: Nuclear Power Source in space – fulfilled and over-fulfilled,
- INPPS 100 t total mass,
- **11-20 t payload mass - scientific, commercial, communication**

International missions in interplanetary space:

1. Mission - Non-Human INPPS Flagship (with only one Flagship):
2028 – 2034 Earth->Mars->Earth plus Earth->Jupiter/Europa
2. Mission - **Human** INPPS Flagship (with the second Flagship):
Earth->Mars->Earth



Non-Human and Human Transport to Mars: Science Payload

Summary Status Science Payload:

Mars candidates:

VaMEx (Valles Marineris Explorer)

FAIM/GRIPS (instrument package proposal to observe Mars atmospheric dynamics from hydroxyl airglow)

Europa candidate:

TRIPLE (an ice melting probe with integrated nanoAUV payload)

Here:

Invitation for scientific payload contributions – worldwide!

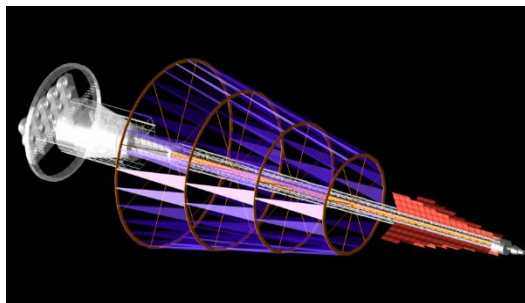
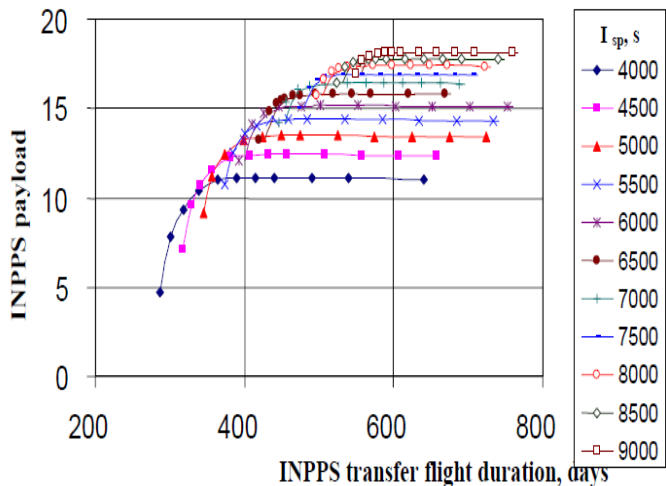
**For Mars/Jupiter/Europa, Earth, Sun, Cosmic Rays and
Astro-/Particle-/Gravitational Physics!**

No problem: high mass science payload!

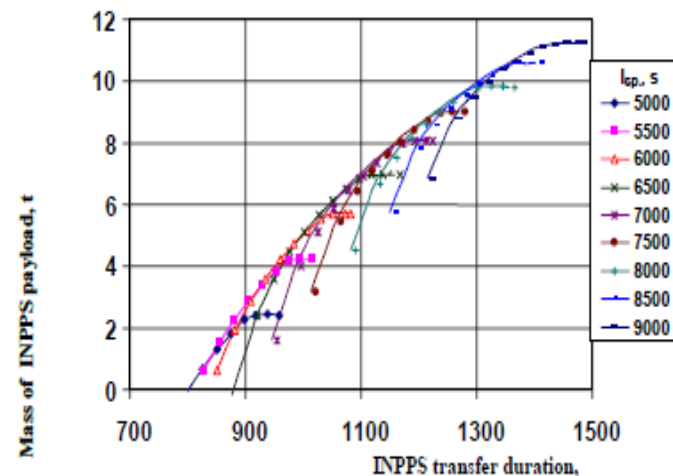
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Non-Human and Human Transport to Mars: Summary and Conclusions



Mars- and Europa-INPPS Flagship.



Mars payload mass versus Earth - Mars flight duration. Parameter: specific impuls electric thrusters.

Europa payload mass versus Earth – Europa flight duration. Parameter: specific impuls electric thrusters.



Mars science payload candidate for INPPS: VaMEx (Valles Marineris Explorer).

NEW SPACE SCIENCE.
NEW SPACE ECONOMY for EARTH SOCIAL DEVELOPMENT with FRONTIER MENTALITY.
IF WE WISH - YES, WE CAN – HUMANS INTERNATIONALLY TO MARS!

