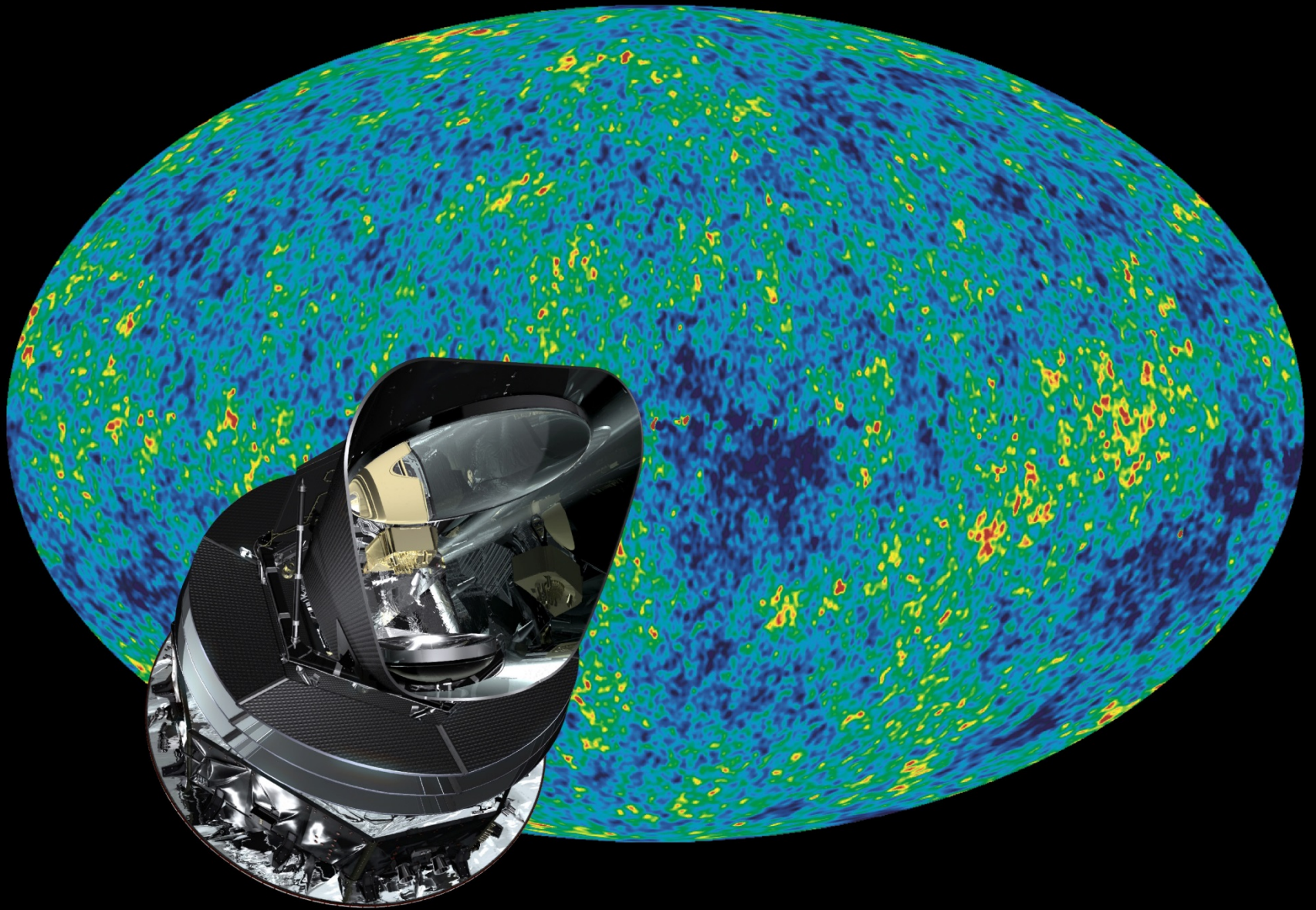
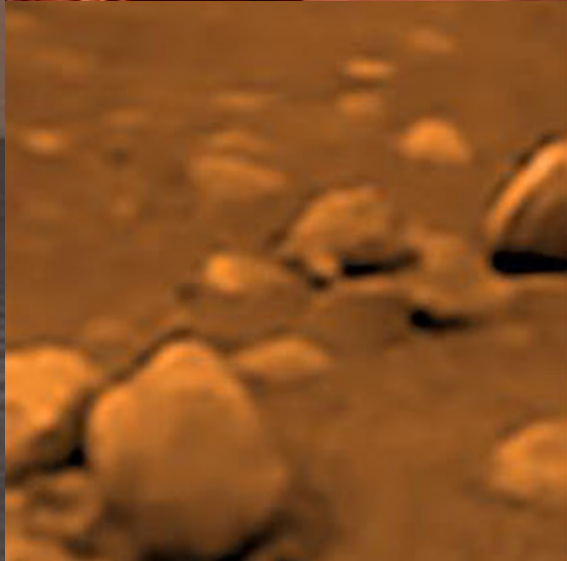
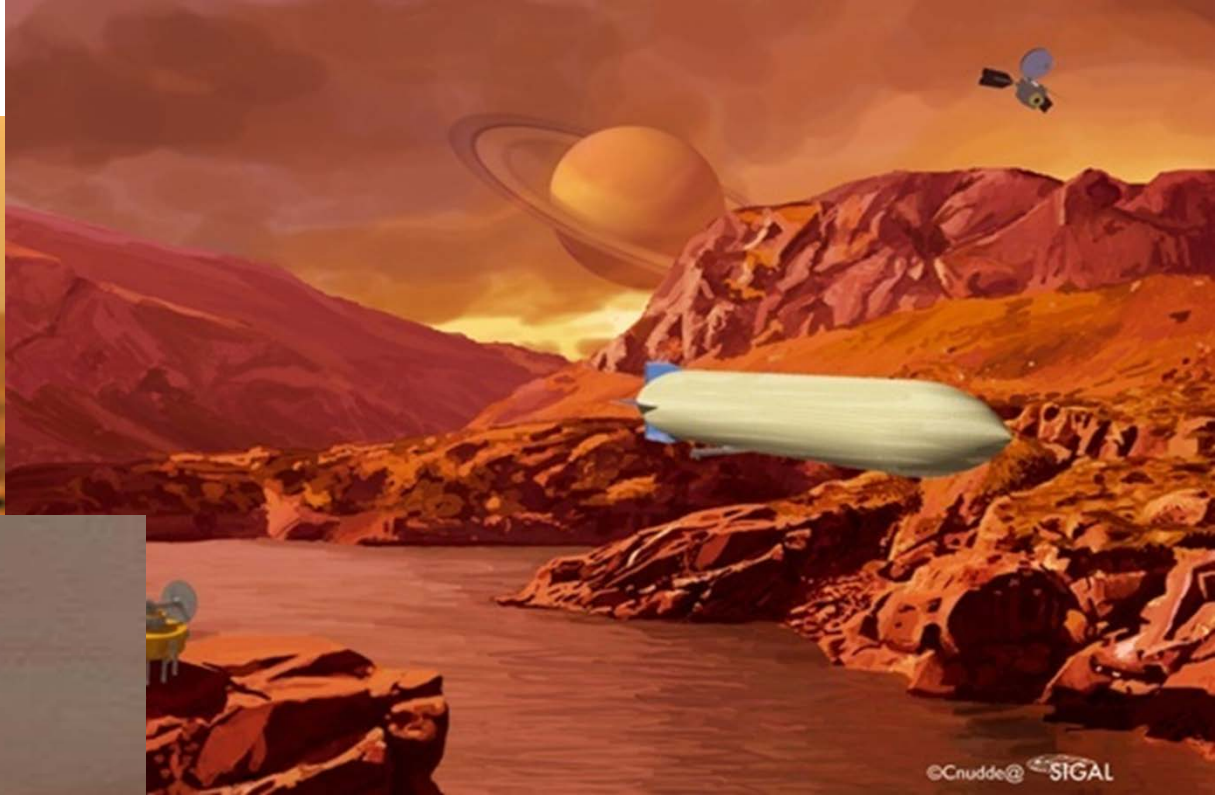


# Some Thoughts on (Im)Possible Solar System Missions

Professor John Zarnecki  
International Space Science Institute  
(ISSI), Switzerland  
Beihang University, China





# From the Literature:

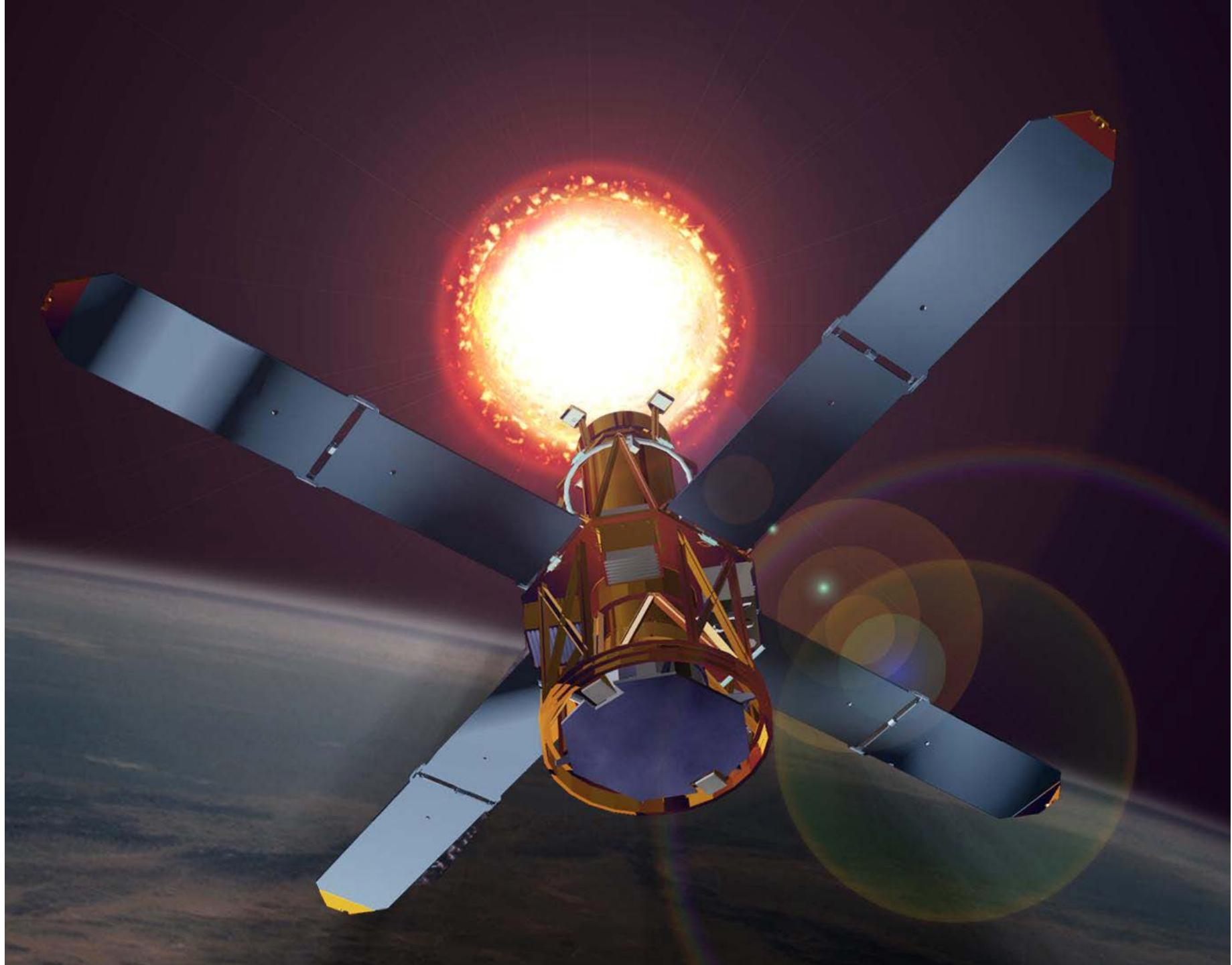
- **ERG – A small-satellite mission to investigate the dynamics of the inner magnetosphere**
- **RHESSI and future small satellites for solar astronomy**
- **Utilizing small satellites to address mid-latitude ionospheric space weather science questions**
- **The potential for observing solar system and cosmic X-rays with novel optics on small satellite platforms**
- **Low-cost Lunar Lander Mission with Mobility for *in-situ* Imaging**
- **A Small Mission For In Situ Exploration Of a Primitive Binary Near-Earth Asteroid**
- **Mars Phobos and Deimos Survey (M-PADS)–A Martian Moons Orbiter and Phobos Lander**
- **Io Volcano Observer (IVO): Budget Travel to the Outer Solar System**

# Contributions at this Workshop

- The Sun 4 (3+1)
- The inner Solar System 1 (0+1)
- The outer Solar System 0
- Minor bodies/NEOs 2 (0+2)
- MIST/Space Physics 11 (4+7)

# S-Class Mission Shortlist

- 1. AXIOM-C (X-ray imaging of the magnetosphere – cusps)
- 2. CHEOPS (Exo-planetary transits)
- 3. LARES-2 (Fundamental physics and general relativity testing)
- 4. MASE (Magnetic activity of stars and exoplanets)
- 5. NITRO (Composition measurement in the inner magnetosphere and auroral region)
- 6. PlaVi (Exo-planetary transits and asteroseismology)
- 7. SIRIUS (Ultraviolet spectroscopy of stars and interstellar medium)
- 8. TOR (Energy dissipation in solar wind turbulence)
- 9. SIGMA (Measurements of the solar corona magnetic field)
- 10. XIPE (X-ray imaging polarimetry)

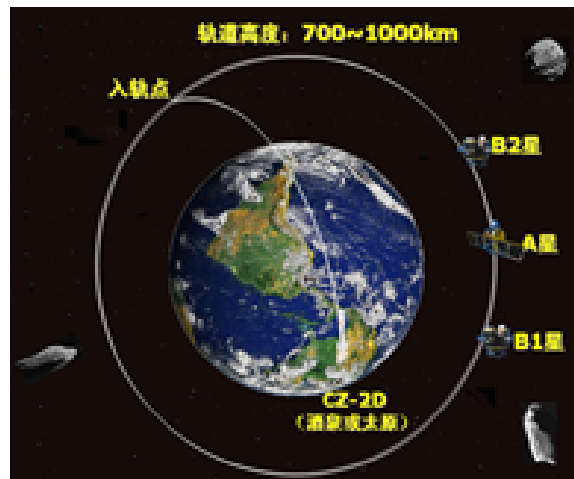


## 2、The research progress

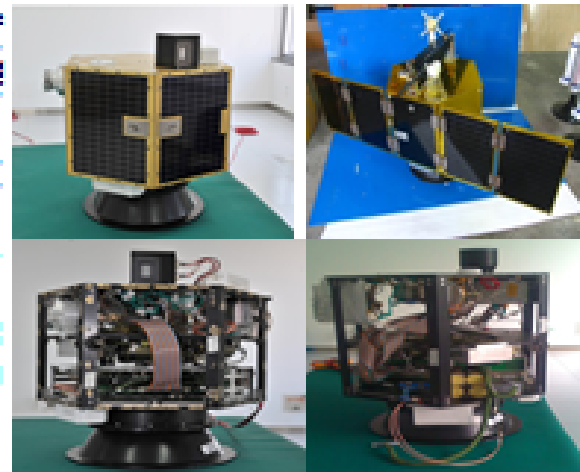
### 2.2 “Three satellite formation for space environment exploration” key project

- “Eleventh Five-Year” period, the Beihang University jointing with DFH Satellite Ltd., Chinese Academy of Sciences Space Center and Tsinghua University the “**Three satellite formation exploration space environment**” key project

Three satellite formation



Satellite prototype Assembly Figure








## 2、Overall mission analysis and technology requirement






### 2.1 project mission——2) space environment exploration

#### □ Three innovation tasks

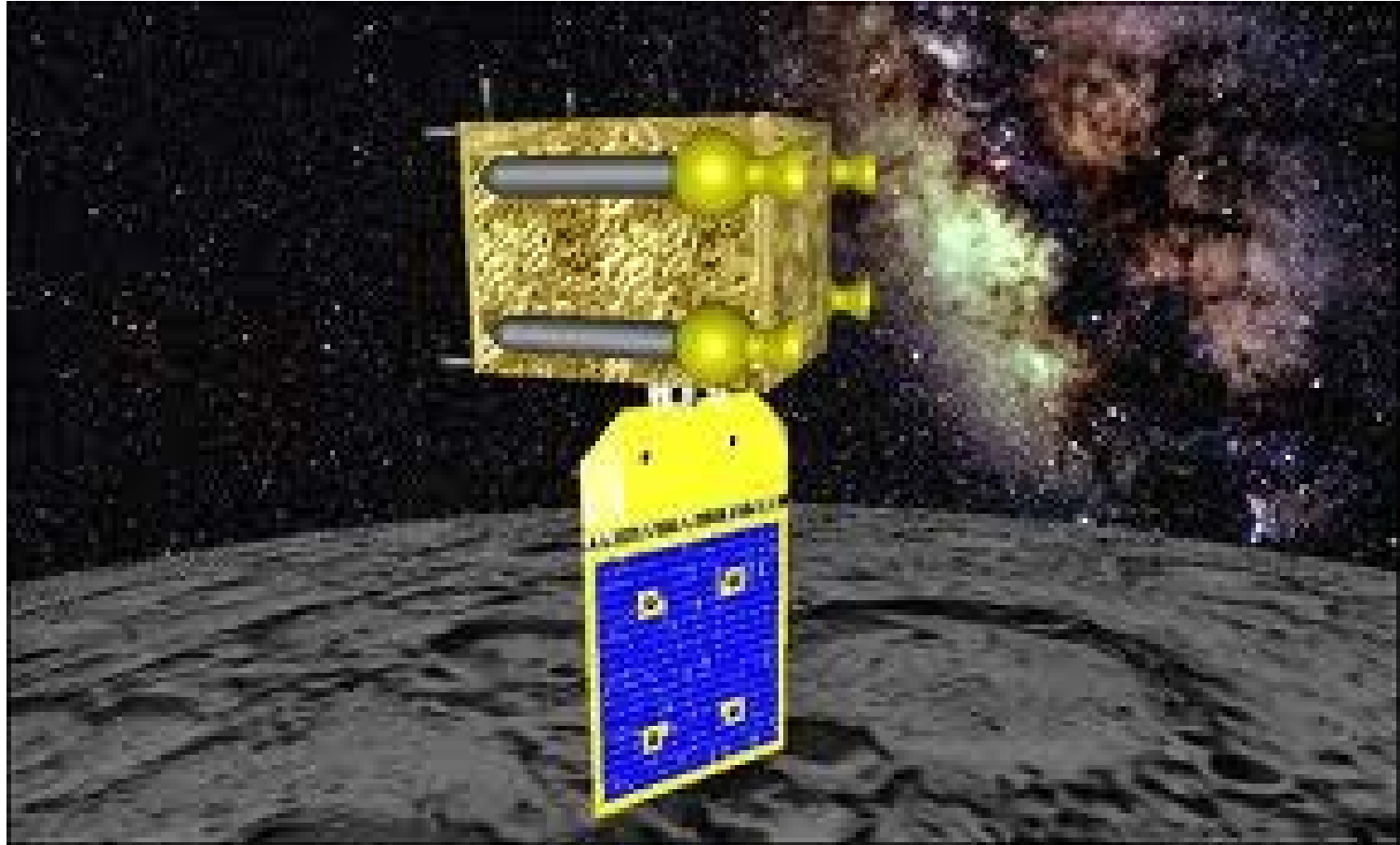
- ① research of accuracy detection/exploration for the the shadow side of near-earth space environment **current system** 
- ② research of near-earth **plasma environment** in small scale structure and motion law 
- ③ the increase and decrease of **high energy particle** in radiation belt both in time and in space evolvement process 

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#### □ Three extended tasks

- ④ evolvement process and forms of aurora when auroral storm and auroral electrojet occurs 
- ⑤ coupling effect between magnetosphere and ionosphere 
- ⑥ **ionosphere disturbance** induced by activity of magnetosphere 







我们期盼与我们的中国同事一同  
登上行星。

