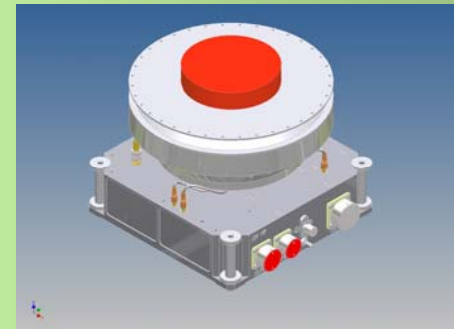


Experiment Aries-L for investigation of lunar regolith

In “Luna-Resource” project (proxy for “Luna-GLOB”)
by secondary ions and neutral atoms mass-
spectrometry

Requirements to conditions and to implementation program

O.L.Vaisberg, G.V.Koinash, R.N.Zhuravlev, T.A.Shachverdyan,
A.Yu.Shestakov, S.N. Podkolzin, M.S.Dolgonosov (IKI)
P.P.Moiseev, S.P.Moiseev (Astron Electronics)
V.V.Letunovski, A.K.Tonshev (SKBKP)
L.S.Gorn (SNIIP)
S.Barabash (IRF)
J.J. Berthellier, J. Becker (LATMOS)



Scientific goals and experimental approach

Primary scientific goal:

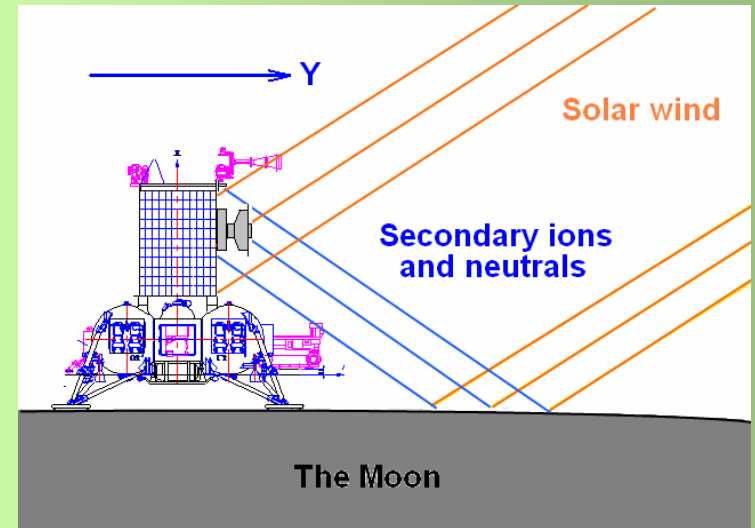
- investigation of composition and structure of lunar regolith in the landing area

Experimental method:

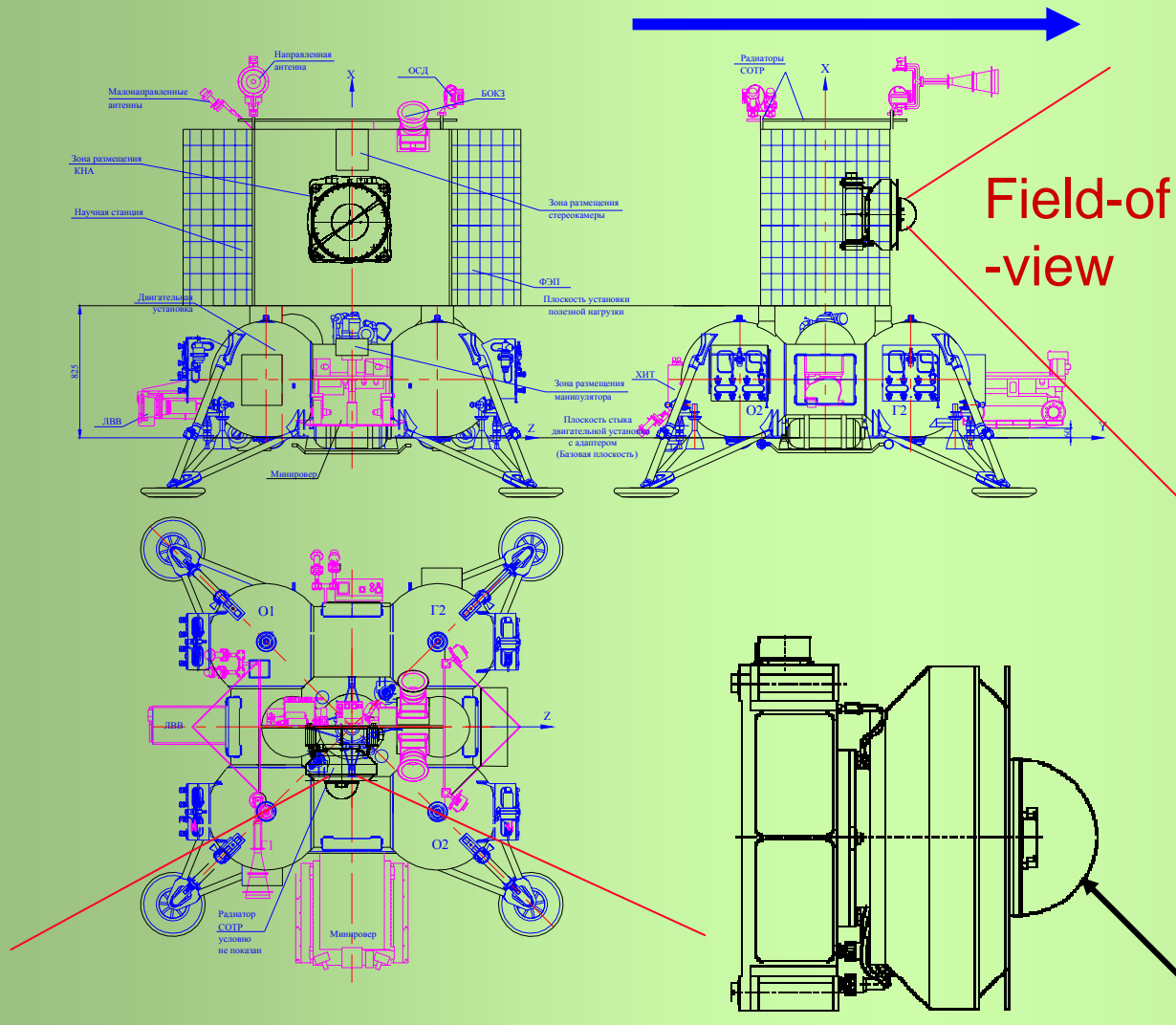
- mass-spectrometry of secondary and reflected ions and neutral atoms

Specifics of experiment:

- using the solar wind as primary illuminating beam
- mapping the landing area by imaging of secondary ions and neutral atoms



Requirements to conditions of experiment



Location on spacecraft and provision of maximum open field-of-view

Field-of-view

Orientation of spacecraft Y-axis along lunar meridian with minimum deflection from horizontal direction

Maximum visibility of the Sun

Field-of-view

Field-of-view

Investigation plan through mission lifetime

- **Instrument operates in automatic mode**
- **Instrument does not work during cruise to the moon**
- **Special initialization procedure required after landing**
- **Instrument operates during mission's lifetime**
- **Instrument operates from dawn to 2 hours after sunset**
- **Instrument is off during the drilling**

Data output

Average data output 2 Kbits/sec

Total data output for lunation 2 Gbits

Other requirements to spacecraft systems (manipulator)

- **Manipulator not required**

Expected results of experiment

- Minimum scientific success
 - average mass composition of regolith averaged over nearby landshaft
- Full success
 - regolith composition variations over ~ 10 spots near landing site
 - structural characteristics of regolith

Interaction with other instruments

- Simultaneous magnetic field measurements are very important

Thank you!