MIR Status Report

EJSM Workshop
ESTEC – 2010 January 18
Leonid Gurvits on behalf of MIR Team
MIR Science Goal

• To perform comparative characterization of the surface composition of the Galilean moons such as e.g.
  – Determination of the fraction of ice/non-ice composition over the subsurface of each moon
  – Determination of the content and distribution of soil constituting elements of the non-ice fraction in the shallow subsurface

• To characterize the radiation environment of the Jovian magnetosphere including in the vicinity of the Galilean moons such as e.g.
  – Determination of the distribution of high energy protons, neutrons and ions inside the Jovian magnetosphere along the cruise phase of the EJSM spacecraft and in the orbits around Ganymede and Europa

• Heritage of HEND (Mars), LEND (Moon) and MGNS (BepiColombo)
## Multi Instrument Radiometry

<table>
<thead>
<tr>
<th>Sensor</th>
<th>Measurement Type</th>
<th>Energy Band</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIRE</td>
<td>electrons</td>
<td>1 keV- 1 MeV</td>
</tr>
<tr>
<td>MIRI</td>
<td>Protons &amp; ions</td>
<td>10 keV-10 MeV</td>
</tr>
<tr>
<td>MIRN</td>
<td>Neutrons</td>
<td>0.01 eV-5 eV</td>
</tr>
<tr>
<td>MIRHX</td>
<td>Hard X-rays</td>
<td>5-150 keV</td>
</tr>
<tr>
<td>MIRSX</td>
<td>Soft X-rays</td>
<td>0.5 keV-10 keV</td>
</tr>
<tr>
<td>MIRG</td>
<td>Gamma-Rays</td>
<td>100 keV-10 MeV</td>
</tr>
</tbody>
</table>
MIR Meeting Reports

• MIR Team Meetings #3 & #4:
  – Nov 2009 @ DLR Bremen:
    • Radiation Assessment and Mitigation
    • Sensor design for JGO
    • Engineering interface of sensors and instrument control units
  – Dec 2009 @ Pasadena:
    • Radiation Assessment and Mitigation
    • Sensor design for JEO.
• Securing national funding in Russia (PI), Germany, USA and the Netherlands underway; positive outlook

• Sensor process routes:
  – Ongoing identification of industrial partners and areas where significant technology development may be required along with overall schedule and costs

• Prepare technical notes of each sensor design for feasibility review by industry.
  – ASIC's and a common ASIC development approach will be implemented