PRETTY
Passive Reflectometry and Dosimetry

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2 Payloads and the platform

- Passive Reflectometer
  - System developed and tested at Beyond Gravity
  - Hardware provided by TU Graz

- Dosimeter
  - Developed and tested at Seibersdorf Laboratories

- Satellite Bus
  - Designed and integrated at TU Graz
Passive Reflectometer Antenna
Dosimeter Payload: SATDOS-1

Total Ionizing Dose (TID)

- Map of trapped electron flux (E > 1 MeV) at 550 km altitude, Source: OMERE

Single Event Effects (SEE)

- Map of trapped proton flux (E > 1 MeV) at 550 km altitude, Source: OMERE

<table>
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<th>1. ISSI 40nm SRAM</th>
<th>2. Cypress 90nm SRAM</th>
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<tbody>
<tr>
<td>SEU Rate during quiet solar conditions</td>
<td>12 SEU/day</td>
<td>3-4 SEU/day</td>
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<tr>
<td>SEU Rate during solar storm</td>
<td>&gt; 1,900 SEU/day</td>
<td>&gt; 6,000 SEU/day</td>
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<td>Main contributor to SRAM SEU rate</td>
<td>Low-energy protons</td>
<td>High-energy protons, solar protons and galactic heavy-ions</td>
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In collaboration with

- ESA/ESTEC The Netherlands
- NOAA/NGDC Boulder

Map of in-orbit SEU monitored by UOSAT-2 in 1984, amateur satellite, LEO, 630 km

Beyond Gravity Austria GmbH
The current setup ..
.. and the setup 2023

Thank you for your attention!