

# ESA Upcoming Activities

18th SPINE Meeting  
8th March 2012  
ESTEC

David Rodgers / ESTEC



Electromagnetics & Space  
Environment Division – TEC-EES

# Programmes

- General Studies Programme (GSP)

*Hmm, I've got an idea... Does it make sense? Does it work in principle?* Call for proposals every 2 years; ESA mandatory programme.

- Technology Research Programme (TRP)

*Let's develop this further... I wanna see this working in the lab!* 3 year cycle; different Service and Tech Domains; mandatory programme.

- General Support Technology Programme (GSTP)

*Let's build the real thing... And get it ready to be flown in space!* Announcement of Opportunity issued every year; optional programme

- <http://emits.esa.int/>
- Intended/Issued/Closed



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# Issued



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# Compact Hot Plasma Monitor for Telecom Satellites

- Issued 15/2/2012
- Closes 11/04/2012
- Objectives:
  - Design and breadboard a miniaturised non-obtrusive hot plasma monitor to perform spectrometry in the energy and flux ranges critical for high level surface charging, and related to Electro Static Discharge (ESD), on GEO telecom missions.
  - Monitor....which performs electron and ion spectrometry in the range 30eV-30 keV.



# Intended



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## Intended

- Dust electrostatic charging, transport and contamination model for Lunar Lander and human exploration missions - TRP
- Plasma induced antenna noise spectroscopy for space weather monitoring – GSP

# CHARACTERISATION OF DUST AND SAMPLE PROPERTIES IN LUNAR ENVIRONMENT SD3

- Intended 12 Q1
- TRP
- Objectives:
  - The objective of this activity is to characterise the behaviour of lunar dust/regolith in a realistic environment, ...includes a precise knowledge of the dust under realistic environment (Pressure, Temperature, Gravity), under the effect of ionising radiation, electrostatic charging etc.

# IESD EFFECTS ON GLOB-TOP ASSEMBLIES

- Intended 10 Q3
- GSTP Period 5 Elem 1
- Objectives:
  - Measure resin resistivity and dielectric breakdown
  - Make an analysis for GEO...other orbits regime can be considered
  - detect the discharge events and measure pulse amplitude and duration under electron beam



# Closed



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# Giove Radiation Data Exploitation for Model, Specification and Effects Tools Updates

- Kick off ~ 1/3/2012 - QinetiQ
- TRP
- Objectives:
  - To use the experiences from GIOVE A and B to comprehensively update the methods and models used for definition of the radiation environment and the calculation of the resulting dose, internal charging and single event effects on components and systems, and to define margins.

# Charging Properties of New Materials

- Kicked-off 12/11/2011- ONERA
- TRP
- Objectives:
  - to obtain secondary electron spectra for some common spacecraft surface materials
  - to improve our understanding of bulk conductivity variations between similar materials
  - to understand the main contributions to bulk conductivity in non-polymer insulators at low temperature



# HIGH-FIDELITY 3-D ENERGETIC ELECTRON SPECTROMETER PHASE A/B

- Kicked-off 08/02/2012 – UCL/KUL
- GSTP
- Objectives:
  - Methods for providing full 3-D information of the incident electron fluxes shall be evaluated. Existing instrument concepts (intended for various particle species) shall be further elaborated to fully focus the instrument response toward 3D high-fidelity electron detection. Miniaturization of the instrument will be included in the Design effort.



# PASSIVE DISCHARGING OF ELECTRICAL POTENTIAL BY ELECTRON FIELD EMISSION

- Will kick off 1/06/2012 – ONERA
- GSP
- Objectives:
  - This study will examine the theoretical basis for using passive electron field emitters to control hazardous levels of spacecraft charging.
  - A conceptual design for such a system will be produced, including a detailed description of the emitter and its location on the spacecraft.

# Closed

- Dusty plasma environments: near-surface characterisation and modelling – GSP

THE END



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