

EXISTING & NEAR TERM MISSIONS

Monday, August 12, 2002

3:00 p.m. - 4:45 p.m.

Chair: Amnon Ginati, European Space Agency/ESTEC

- SSC02-I-1 **TU Sat 1: A Novel Communications and Scientific Satellite**
Presenter: Will Holmes - Taylor University
- SSC02-I-2 **MicroVacuum Arc Thruster Design For a CubeSat Class Satellite**
Presenter: Filip Rysanek - University of Illinois in Urbana & Champaign
- SSC02-I-3 **Demonstration of Small Satellite Technologies by the BIRD Mission**
Presenter: Sergio Montenegro - Deutsches Zentrum fur Luft - und Raumfahrt (DLR)
- SSC02-I-4 **Overview of the NPS Spacecraft Architecture and Technology Demonstration Satellite, NPSAT1**
Presenter: James Horning - Naval Postgraduate School
- SSC02-I-5 **PCSat and Follow-On Payloads**
Presenter: Bob Bruninga - US Naval Academy
- Withdrawn* **SaudiSat Experimental Micro-Satellites**
Presenter: S. Alhumaidi - KACST, Saudi Arabia
- SSC02-I-7* **Status of the Icarus Student Satellite Mission - A Fully Autonomous Student Built Small Satellite**
Presenter: Hannah Goldberg - University of Michigan
- Withdrawn **FalconSAT-2: A Student-Built Microsatellite to Investigate Plasma Depletions in the Ionosphere**
Presenter: Linda Krause - USAFA

Alternates*

**BOLD NEW MISSIONS USING
"BREAKTHROUGH TECHNOLOGIES" I**
Tuesday, August 13, 2002
11:00 a.m. - 12:45 p.m.

Chair: Roy Gladden, Jet Propulsion Laboratory

- SSC02-II-1 **The Inertial Stellar Compass: A New Direction in Spacecraft Attitude Determination**
Presenter: Tye Brady - Draper Laboratory
- SSC02-II-2 **Next Generation Solar Array Technologies for Small Satellites**
Presenter: David Goldstein – AeroAstro, Inc.
- SSC02-II-3 **FFDEM: Demonstrating Formation Flying with Small Spacecraft**
Presenter: Luis Gomes - Surrey Satellite Technology Limited
- SSC02-II-4 **Determining Optimum Modulation for Inter-Satellite Communications Systems**
Presenter: Gary Mitchell – AeroAstro, Inc.
- SSC02-II-5 **Preliminary Design of a High Performance Solar Sailing Mission**
Presenter: Dan Cohen – AeroAstro, Inc.
- SSC02-II-6 **Product Platform Concepts Applied to Small Satellites: A New Multipurpose Radio Concept**
Presenter: Robert Caffrey - NASA/Goddard Space Flight Center
- SSC02-II-7* **VISTA - A Constellation for Real Time Regional Imaging**
Presenter: Chad Smithies - Surrey Satellite Technology Limited
- Withdrawn* **SIMONE: Smallsat Intercept Missions to Objects Near Earth**
Presenter: Nigel Wells - QINETIQ

Alternates*

**BOLD NEW MISSIONS USING
"BREAKTHROUGH TECHNOLOGIES" II**
Tuesday, August 13, 2002
2:15 p.m. – 4:00 p.m.

Chair: Linda Krause, United States Air Force Academy

- SSC02-III-1 **Arc-Second Attitude Control for the NESS Asteroid Tracking Microsat**
Presenter: Dr. Kieran Carroll – Dynacon Enterprises, Ltd
- SSC02-III-2 **A Small-Satellite Demonstrator for Generating Artificial Gravity in Space via a Tethered System**
Presenter: Andre Mazzoleni - Texas Christian University
- SSC02-III-3 **Design of a Pico Satellite for the Monitoring of a Thin Film Solar Array's Performance**
Presenter: Jerry Teshirogi – Lockheed Martin Space Systems Company
- SSC02-III-4 **A Nanosatellite to Demonstrate GPS Oceanography Reflectometry**
Presenter: Luis Gomes - Surrey Satellite Technology Limited
- SSC02-III-5 **Design and Implementation of a Sparse Aperture Array Satellite**
Presenter: Soon-Jo Chung - MIT
- SSC02-III-6 **NanoObservatory™: A Technology Solution to Enable Earth Imaging for Everyone**
Presenter: Todd Harrison – AeroAstro, Inc
- Withdrawn* **The Single Smallsat: Coverage Efficiency vs Lowest-Cost Approach**
Presenter: J. Draim - Space Resource America Corp
- SSC02-III-8* **Spaceframe: Modular Spacecraft Building Blocks for Plug and Play Spacecraft**
Presenter: Jon Miller – AeroAstro, Inc.

Alternates*

**INNOVATIVE MISSION
OPERATION CONCEPTS**

Tuesday, August 13, 2002

4:30 p.m. – 6:15 p.m.

Chair: Professor Robert Twiggs, Stanford University

- SSC02-IV-1 **Precise Orbit Determination of LEO Formation Flights Using Carrier-Phase Difference and Pseudorange Measurements**
Presenter: Egemen Imre – Surrey Space Centre
- SSC02-IV-2 **AUTOGEN: The Mars 2001 Odyssey and the "Autogen" Process**
Presenter: Roy Gladden - Jet Propulsion Laboratory
- SSC02-IV-3 **A Novel Method for Achieving SAR Imaging with a Pair of Micro-Satellites by Means of a Bi-Static Configuration**
Presenter: Chris Jackson - Surrey Satellite Technology Ltd
- Withdrawn* **CHIPSat's TCP/IP Mission Operations Architecture - Elegantly Simple**
Presenter: Jonathan Wolff - SpaceDev
- SSC02-IV-5 **Epoch Time Assisted Orbit Determination for Near Equatorial Low Earth Orbiting Satellites**
Presenter: Hilmi Sanusi – University of Stellenbosch
- SSC02-IV-6 **A Distributed Computing Architecture for Small Satellite and Multi-Spacecraft Missions**
Presenter: Christopher Kitts – Robotic Systems Laboratory, Santa Clara University
- SSC02-IV-7* **Commanding via the CCSDS Forward CLTU Service**
Deane Sibol – The John Hopkins University, Applied Physics Laboratory
- SSC02-IV-8* **A Recovery-Oriented Ground System**
James Cutler – Stanford University

Alternate*

**ADVANCED TECHNOLOGIES,
SUBSYSTEMS, COMPONENTS & SENSORS I**
Wednesday, August 14, 2002
8:30 a.m. – 10:15 a.m.

Chair: Howard Runge, Orbital Sciences Corporation

- SSC02-V-1 **Electrical Design and Testing of an Uplink Antenna for Nanosatellite Applications**
Presenter: Christian Hearn – Virginia Tech
- SSC02-V-2 **Active Antennas for CubeSat Applications**
Presenter: Timothy Fujishige - University of Hawaii at Manoa
- Withdrawn* **Mass Storage Techniques for Micro-Satellites**
Presenter: Prof. Pieter Bakkes – University of Stellenbosch
- SSC02-V-4 **A Low Power Command and Control Module for Small Satellites**
Presenter: Chad Fish - Space Dynamics Laboratory
- SSC02-V-5 **Dynamics and Control of Tethered Spacecraft Formations for Multiscale Precision Reconfiguration and Data Collection**
Presenter: M. Quadrelli - Jet Propulsion Laboratory
- SSC02-V-6 **Continuous Operation of Micro Plasma Thruster "Microwave Engine"**
Presenter: Shin Satori – Hokkaido Institute of Technology
- SSC02-V-7* **Moved to Session VIII**
- SSC02-V-8* **STPSat-1: A New Approach to DoD Experiment Spaceflight**
Presenter: Glen Cameron – AeroAstro, Inc.

Alternate*

**10TH ANNUAL STUDENT SCHOLARSHIP
COMPETITION**

Wednesday, August 14, 2002

10:45 a.m. – 12:30 p.m.

Technical Chair: Doug Freesland, Applied Systems Engineering

Technical Chair: Ann Grandfield, Orbital Sciences Corporation

- SSC02-VI-1 **Attitude Determination for Small Satellites
With Modest Pointing Constraints**
Presenter: Todd Humphreys - Utah State
University
- SSC02-VI-2 **Canada's Smallest Satellite: The Canadian
Advanced Nanospace eXperiment (CanX-1)**
Presenters: James Wells, Luke Stras & Tiger
Jeans - University of Toronto
- SSC02-VI-3 **Design Analysis for Solar Sailing from
Geosynchronous Transfer Orbit**
Presenter: Kyle Ressler - Washington University
in St. Louis
- SSC02-VI-4 **Practical Results on the Development of a
Control Moment Gyro Based Attitude Control
System for Agile Small Satellites**
Presenters: Vaios Lappas & W.H. Steyn -
University of Surrey
- SSC02-VI-5 **The Electrical System Design, Analysis,
Integration, and Construction of the Cal Poly
State University CPI CubeSat**
Presenter: Jake Schaffner - California
Polytechnic State University
- SSC02-VI-6 **Two-Axis MOEMS Sun Sensor for Pico
Satellites**
Presenters: Jan Hales & Martin Pedersen -
Technical University of Denmark (DTU)
- SSC02-VI-7* **Predictive Thermal Analysis of the Combat
Sentinel Satellite**
Blake Moffitt - Utah State University

Alternate*

**LAUNCH SYSTEMS & ORBITAL
MANEUVERING**

Wednesday, August 14, 2002

2:00 p.m. - 3:45 p.m.

**Chair: Major Jim Shoemaker,
DARPA Tactical Technology Office**

- SSC02-VII-1 **Enabling Technologies for Small Satellite Orbit Transfer from the Space Shuttle**
Presenter: Arnold Nowinski – AFRL
- SSC02-VII-2 **Aerobraking Technology for Earth Orbit Transfers and Microsatellite Aerocapture**
Presenter: Dan Cohen – AeroAstro, Inc.
- SSC02-VII-3 **A Deployment Strategy for Multiple Secondary Payloads on the MLV-05 Mission**
Presenter: Donald Keenan - The Aerospace Corporation
- SSC02-VII-4 **A Monopropellant Multi-Newton Thruster System for Attitude Control of Nanosatellites**
Presenter: Donald Platt – Micro Aerospace Solutions, Inc.
- SSC02-VII-5 **Multiple Payload Adapters for Low Cost Space Lift**
Presenter: John Higgins - AFRL/USAF Kirtland AFB
- SSC02-VII-6 **"Where Do I Start?" Rides to Space for Scientific and Academic Payloads**
Matt Bille – Booz Allen Hamilton
- SSC02-VII-7* **Series of Satellite Encounters to Solve Autonomous Formation Assembly Problem**
Presenter: Tamas Kormos - Surrey Satellite Technology Ltd
- SSC02-VII-8* **Forced Precessions of IMAGE**
Presenter: Mark Tapley – Southwest Research Institute

Alternates*

**ADVANCED TECHNOLOGIES, SUBSYSTEMS,
COMPONENTS & SENSORS II**

Wednesday, August 14, 2002

4:15 p.m. – 6:00 p.m.

**Chair: Yolanda King, Air Force Research
Laboratory/VSSS**

**SSC02-VIII-1 Development of a Micro-Newton Thruster for
a Drag-Free Control System**

Presenter: Dr. Rachel Leach - Design Net
Engineering

**Withdrawn* On the Dynamics of an Elastically Supported
Reaction Wheel in a Rigid Leo Satellite**

Presenter: Dr. K. Alsaif – Sunspace, King
Saud University

**SSC02-VIII-3 A Real Time Image Processing Subsystem:
GEZGIN**

Presenter: Oguz Benderli - TUBITAK-BILTEN,
Turkey

**SSC02-VIII-4 The Ultrasonic Piezo Drive - An Innovative
Solution for High Accuracy Positioning**

Presenter: Rene Seiler - European Space Agency
(ESA/ESTEC)

**SSC02-VIII-5 Self Deploying, Lightweight, Thin-Film PV
Solar Array Structure**

Presenter: Mary Krohnfeldt - MicroSat
Systems Inc.

SSC02-VIII-6 NPSAT1 Magnetic Attitude Control System

Presenter: Barry Leonard - Naval Postgraduate
School

SSC02-VIII-7* BalloonSat: Missions to the Edge of Space

Presenter: Chris Koehler - Colorado Space Grant
Consortium, University of Colorado at Boulder

**Withdrawn* TMR Implementation Via Time Redundancy
on a Single High-Speed Commercial Processor
with a Rad-Tolerant Voter**

Presenter: Gary Grisbeck – General Dynamics

Alternates*

SCIENCE & EXPLORATION
Thursday, August 15, 2002
8:30 a.m. – 10:15 a.m.

Chair: Gil Moore, Project Starshine

- SSC02-IX-1 **Target of Opportunity Multipoint in Situ Measurements with Falcon-SAT-2**
Presenter: Linda Krause - United States Air Force Academy
- SSC02-IX-2 **MEMS Technology Demonstration on Traveler I**
Presenter: Brian D'Souza – University of Southern California
- SSC02-IX-3 **The Ionospheric Nanosatellite Constellation, Exploring Space Weather**
Presenter: Charles Swenson – Utah State University
- SSC02-IX-4 **Design and Test of a Solid State Charged Particle Detector for Cubesat**
Presenter: Michael Dowler - Lockheed Martin Missiles & Space Operations
- SSC02-IX-5 **Earthquake Forecast Science Research with a Small Satellite**
Presenter: Martin Sweeting - Surrey Satellite Technology Ltd
- SSC02-IX-6 **A CubeSat Derived Design for a Unique Commercial Science Application**
Presenter: Eric Tapio - Stanford University
- SSC02-IX-7* **Moved to Session VIII**

Alternate*

LESSONS LEARNED
Thursday, August 15, 2002
10:45 a.m. – 12:30 p.m.

Chair: Dr. Todd Mosher, Utah State University

- SSC02-X-1 **Kodiak Star - The Mission, the Challenges, the Success - A Look at Lessons Learned from the First Orbital Flight From Alaska**
Presenter: Garrett Skrobot - Kennedy Space Center, NASA
- SSC02-X-2 **University Developed Hardware for the Space Shuttle: Strategies for Success**
Presenter: Andrew Peffer – Jackson & Tull
- SSC02-X-3 **Results from the Advance Power Technology Experiment on the Starshine 3 Satellite**
Presenter: Phillip Jenkins - Ohio Aerospace Institute/NASA
- SSC02-X-4 **Preparing a COTS Radio for Flight - Lessons Learned From the 3 Corner Satellite Project**
Presenter: Stephen Horan - New Mexico State University
- SSC02-X-5 **Lessons Learned of NSPO's Picosatellite Mission: YamSat - 1A, 1B & 1C**
Presenter: Chen-Joe Fong - National Space Program Office, Taiwan
- SSC02-X-6 **AO-40 RUDAK Experiment Controller**
Presenter: Jim White - Colorado Satellite Services
- SSC02-X-7* **Picosats as Payload Carriers**
Presenter: Michael Obland - Montana State University, Space Science & Engineering

Alternate*