



2019 **AIDAA**✈

XXV INTERNATIONAL CONGRESS
OF AERONAUTICS AND ASTRONAUTICS

GENERAL PROGRAMME



SAPIENZA
UNIVERSITÀ DI ROMA



**FACOLTÀ DI INGEGNERIA
CIVILE E INDUSTRIALE**

SEPTEMBER 9-12, 2019

ROME, ITALY

WWW.AIDAA2019.COM



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Practical Information

AIDAA 2019 XXV International Congress, organized by Section of Rome, will be held from Monday through Thursday, **September 9-12, 2019** at the **Faculty of Civil and Industrial Engineering of Sapienza Università di Roma, via Eudossiana 18, Rome.**

All of the Congress attendees are requested to **check in at the Registration Desk.**

Registration begins at 16.00 on Sunday, September 8 at the Faculty of Civil and Industrial Engineering.

The time allocated for each presentation is 20 minutes including questions and discussion. All lecture rooms are equipped with a computer.

A wireless network is available at the Congress. Each attendee will receive a personal user ID and password, with the instructions for wi-fi connection.

The location of the coffee break is the Cloister of the Faculty. Coffee breaks are available all day long as well as relax areas.

Lunch are included in the Congress registration fee and will be served in the Cloister.

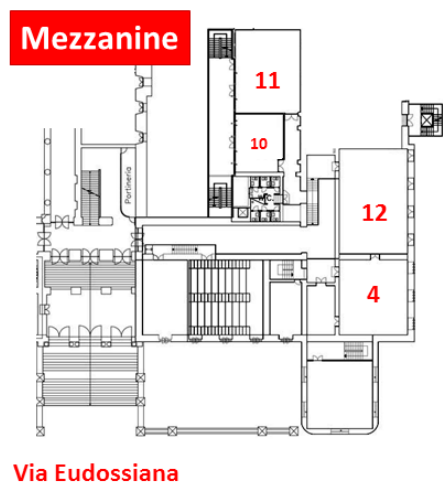
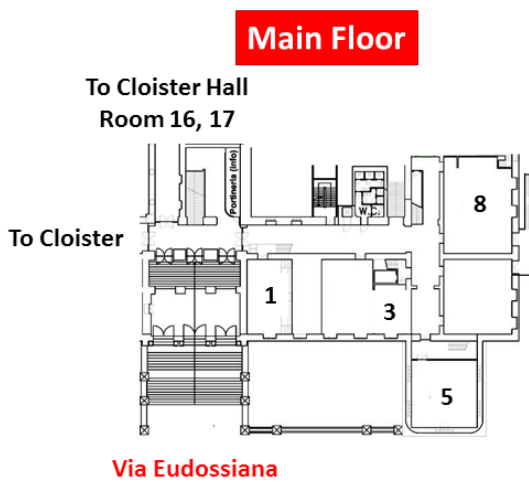
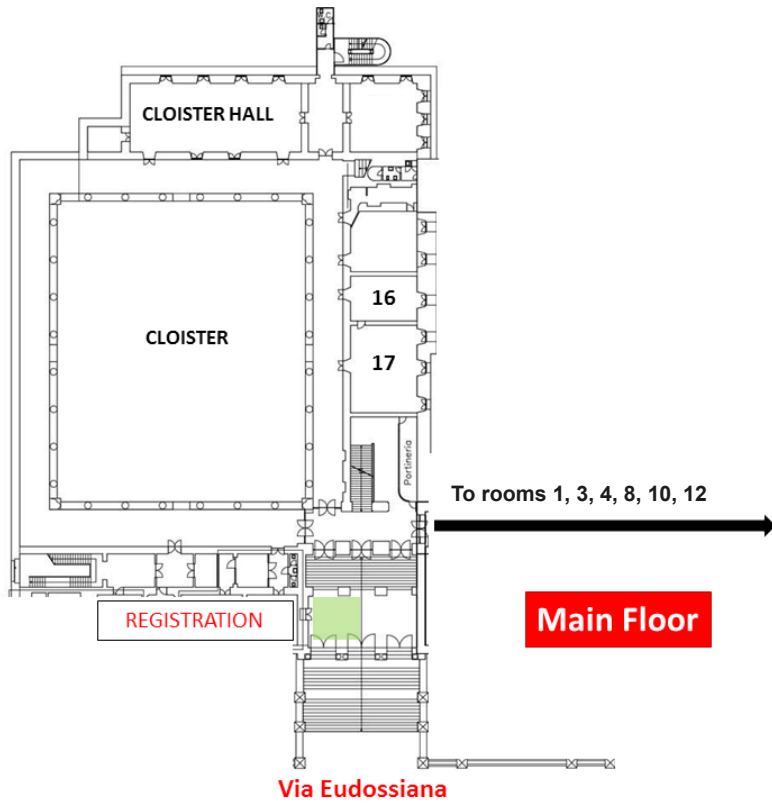
Monday September 9, in the late afternoon from 18.00 to 20.00, all the Congress Delegates are invited to the Sala della Protomoteca in Campidoglio, where the **Mayor of Rome will greet all Delegates.** To reach the Campidoglio from the Faculty of Engineering, will be an opportunity for a 30 minutes walk inside the iconic historical landmarks of Rome, the Colosseo, the Fori Imperiali and the Trajan Column.

The **Social Dinner** will be held on Wednesday, September 11 in the luxury location of **Brancaccio Palace**, Viale del Monte di Colle Oppio, 7. The location is within walking distance, 5 minutes, of the Faculty of Engineering.

On Friday, September 13, AIDAA and Italian Air Force will organize a **Special free visit to the Italian Air Force Historical Museum** at Vigna di Valle. To get on the free of charge conference bus, kindly offered by **Aeronautica Militare**, registration is needed. Limited seats are available. Contact secretariat: info@aidaa.it.

For attendees' convenience, some Taxi services are listed here: Cooperativa Radio Taxi (0039.06.3570), Pronto Taxi (0039.06.6645), Samarcanda (0039.06.5551), Taxi Tevere (0039.06.4994).

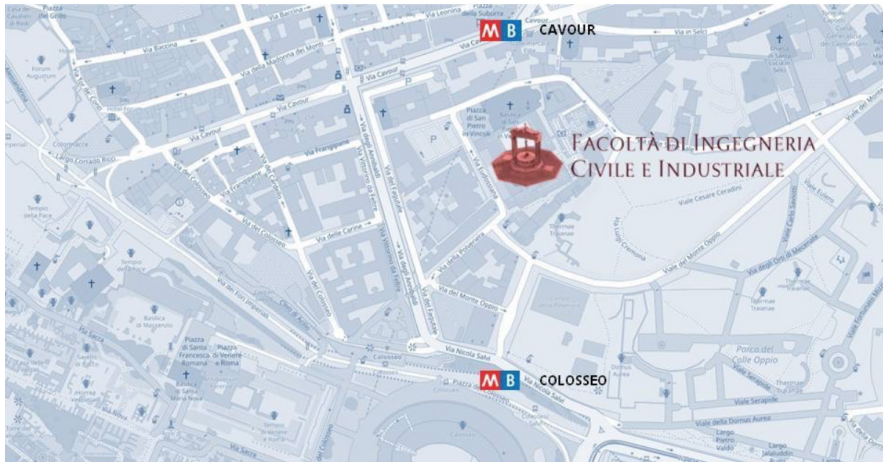
Venue Plan



VIA EUDOSSIANA 18

Location

Faculty of Civil and Industrial Engineering
of Sapienza Università di Roma, via Eudossiana 18, Rome.



How To Reach The Venue

By plane

Leonardo da Vinci International Airport of Fiumicino (Rome); railway connection (from 6.00 to 22.50) to Termini Station; underground line B from the Termini stop (towards Rebibbia or Conca d'Oro) and stop at Colosseo or Cavour.

International Airport G.B. Pastine di Ciampino (Rome): regional rail link (FL4 FL6) to Termini station; underground line B (direction Laurentina) to the Cavour or Colosseo stop; Regional buses for Rome COTRAL (see www.cotralspa.it)

By car

Drive toward Largo della Polveriera, Via Eudossiana (One Way); paid parking at Piazza San Pietro in Vincoli. The center of Rome is a traffic-limited zone. Please check on <https://romamobilita.it/en>.

Public transport

Subway line B (Cavour or Colosseo stop); bus n. 75, 117 and C3 (stops on Via Cavour and Via degli Annibaldi; see www.atac.roma.it) Subway line A (Vittorio Emanuele then walk for 10 minutes toward Via Eudossiana 18).

Useful Websites

Leonardo Da Vinci International Airport: <http://www.adr.it/fiumicino>

G.B. Pastine International Airport <http://www.adr.it/ciampino>

Trenitalia <https://www.trenitalia.com/>

Leonardo Express train https://www.trenitalia.com/it/treni_regionali/lazio/leonardo_express.html

Cotral bus Service <https://www.cotralspa.it>

Atac, Public Transportation <https://www.atac.roma.it/>

Organizing Committee

Prof. Mario Marchetti, AIDAA, Congress Chairman

Mrs. Daniela Vinazza, AIDAA

Prof. Fabio Celani, Scuola di Ingegneria Aerospaziale

Prof. Paolo Gasbarri, Facoltà di Ingegneria Civile ed Industriale (DIMA)

Prof. Paolo Gaudenzi, Facoltà di Ingegneria Civile ed Industriale (DIMA)

Prof. Francesco Nasuti, Facoltà di Ingegneria Civile ed Industriale (DIMA)

Prof. Giovanni Palmerini, Scuola di Ingegneria Aerospaziale

Prof. Fabio Santoni, Facoltà di Ingegneria Civile ed Industriale (DIAEE)

Prof. Fulvio Stella, Facoltà di Ingegneria Civile ed Industriale (DIMA)

Ing. Marta Albano, Agenzia Spaziale Italiana

Ing. Andrea Delfini, Facoltà di Ingegneria Civile ed Industriale (DIAEE)

Dott. Roberto Pastore, Facoltà di Ingegneria Civile ed Industriale (DIMA)

Ing. Antonio Vricella, Facoltà di Ingegneria Civile ed Industriale (DIAEE)



GENERAL PROGRAMME

MONDAY

MORNING 8:30-13:00 Room 1

8.30-9.30 Registration and welcome coffee

9.30-10.45 OPENING CEREMONY

Prof. **EUGENIO GAUDIO**

Magnifico Rettore della Sapienza Università di Roma

Dr. **NICOLA ZACCHEO**

Presidente Ente Nazionale per l'Aviazione Civile

Gen. Ispettore Capo **BASILIO DI MARTINO**

Capo del Corpo del Genio Aeronautico, Aeronautica Militare

Ing. **GIULIO RANZO**

Amministratore Delegato Avio s.p.a.

Ing. **GIORGIO SACCOCCIA**

Presidente Agenzia Spaziale Italiana

GABRIELE MASCETTI, Agenzia Spaziale Italiana
will introduce ESA Astronaut

LUCA PARMITANO

International Space Station, LEO orbit

Greetings to Delegates of the A.I.D.A.A. Congress



Coffee Break

MONDAY

11.30-13.00 PLENARY LECTURES:

Prof. Brian J. Cantwell, Stanford University USA

“A hybrid propulsion solution for the Mars ascent vehicle”

Prof. Oleg M. Alifanov, Moscow Aviation Institute (MAI, Russian Federation)

“Identification and verification of mathematical models in the process of designing and testing aerospace vehicles”

13.00 – 14.00 Lunch

AFTERNOON 14.00 -16.30

SESSION		Room
1	STRUCTURES 1	17
21	DAMAGE TOLERANCE OF COMPOSITE STRUCTURES: BEYOND THE STATE OF THE ART KEYNOTE PROF. FERRI M H ALIABADI Imperial College London (UK)	CLOISTER
23	THE STATUS AND PERSPECTIVES OF ROCKET PROPULSION RESEARCH IN ITALY KEYNOTE PROF. MARCELLO ONOFRI Sapienza Università di Roma	1
13	NAVIGATION	10
7	ASTRODYNAMICS 1	11
31	LEGAL CHALLENGES OF NEW SPACE APPLICATIONS	8
42	THE WINSIC4AP EUROPEAN PROJECT	12

18,00-20,00 Greetings from **THE MAYOR OF ROME**

Sala della Protomoteca, Campidoglio



LECTURE: Dr.ssa Barbara Negri, Agenzia Spaziale Italiana

“La Scienza dallo Spazio: il Presente e le Prospettive Future”

TUESDAY

MORNING 9.00-13.00

9.00-9.30 Plenary Lecture, Room: 1

Prof. Daniele Mortari, Texas A&M University - 3141 TAMU- USA

“From Art to Science: The Flower Constellations Theory Evolution”

Session		Room
2	STRUCTURES 2	17
24 e 24 Bis	THE STATUS AND PERSPECTIVES OF ROCKET PROPULSION RESEARCH IN ITALY	8
32	LEGAL CHALLENGES OF NEW SPACE APPLICATIONS	11
22	DAMAGE TOLERANCE OF COMPOSITE STRUCTURES: BEYOND THE STATE OF THE ART	10
29	NANOSATELLITE SYSTEMS AND MISSIONS KEYNOTE PROF. MENGU CHO Kyushu Institute of Technology, Kitakyushu, Japan	1
27	RED PLANET EXPLORATION: RESEARCH STATUS OF LIFE SUPPORT SYSTEMS AND INFRASTRUCTURES FOR COLONIZATION OF MARS	CLOISTER

13.00 – 14.00 Lunch

AFTERNOON 14.00-19.00

Session		Room
30	NANOSATELLITE SYSTEMS AND MISSIONS	1
28	RED PLANET EXPLORATION: RESEARCH STATUS OF LIFE SUPPORT SYSTEMS AND FRASTRUCTURES FOR COLONIZATION OF MARS	CLOISTER
25	THE STATUS AND PERSPECTIVES OF ROCKET PROPULSION RESEARCH IN ITALY	8
12	ATTITUDE CONTROL	10
10	REMOTE SENSING 1	11
4	COMPOSITES	17

14.00- 14.30 Room: Cloister

Aldo Frediani, Silvia Schilgerius

“AEROTECNICA MISSILI E SPAZIO” A SPRINGER NATURE JOURNAL

WEDNESDAY

MORNING 9.00-13.00

9.00-9.30 Plenary lecture, Room: 1

Eng. Joseph Post, Federal Aviation Administration, Washington, DC, USA

“Trajectory-based operations: the next revolution in Air Traffic Management”

Sessions 9.30 – 13.00

Session		Room
18	AIR TRAFFIC MANAGEMENT EFFICIENCY IMPROVEMENTS THROUGH TRAJECTORY-BASED OPERATIONS: A DUAL PERSPECTIVE FROM THE US AND EUROPE	1
3	STRUCTURES 3	17
8	ASTRODYNAMICS 2	10
11	REMOTE SENSING 2	11
39	ADAPTIVE STRUCTURES FOR AERONAUTICAL APPLICATIONS	8
19	HUMAN CENTRED DESIGN FOR PASSENGER’S ENHANCED COMFORT AND WELLBEING IN AIRCRAFT CABIN	CLOISTER

11.00- 13.00 ROUND TABLE, Room: CLOISTER

Coordinator Dott. Giuseppe Pagnano

“RUOLO E ATTIVITÀ DEI DISTRETTI AEROSPAZIALI ITALIANI”

13.00 – 14.00 Lunch

AFTERNOON 14.00-17.30

Session		Room
17	THE CHALLENGE OF THE SUBORBITAL TRANSPORTATION AND THE NEW SPACE ECONOMY	1
5	AEROSPACE STRUCTURES VALIDATION KEYNOTE: PROF. IGNAZIO CIUFOLINI Salento University, Lecce	10
20	HUMAN CENTRED DESIGN FOR PASSENGER’S ENHANCED COMFORT AND WELLBEING IN AIRCRAFT CABIN	CLOISTER
41	MOON EXPLORATION, THE GATEWAY TO THE STARS	17
40	ADAPTIVE STRUCTURES FOR AERONAUTICAL APPLICATIONS	8

16.00-18.00 Room: CLOISTER

Coordinator Dott.sa Annamaria Nassisi

Symposium “SPACE ECONOMY: WOMEN AS GAME CHANGER AND INNOVATOR”

19.00-23.00

SOCIAL DINNER BRANCACCIO PALACE

Viale del Monte di Colle Oppio, 7



THURSDAY

MORNING 9.30-13.00

Session		Room
6	MATERIALS KEYNOTE PROF. FRANCESCO VENIALI Sapienza Università di Roma	17
36	THE ITALIAN CONTRIBUTION TO THE ISS RESEARCH AND THE ASI EXPERIMENTS FOR THE MISSION BEYOND	1
34	INTERNATIONAL BALLOON STRATOSPHERIC ACTIVITIES	CLOISTER
33	SPACE DEBRIS	10
14	ADVANCED ENERGY STORAGE AND PROPULSION SYSTEMS IN AERONAUTICS	11
26	PLANETARY EXPLORATION KEYNOTE: PROF. LUCIANO IESS Sapienza Università di Roma	8

13.00-14.00 Lunch

AFTERNOON 14.00-16.00

Session		Room
37	THE ITALIAN CONTRIBUTION TO THE ISS RESEARCH AND THE ASI EXPERIMENTS FOR THE MISSION BEYOND	1
38	PARSIFAL PROJECT: A DISRUPTIVE AIRCRAFT FOR FUTURE AIR TRANSPORT	CLOISTER
15	ROTORCRAFT	17
9	AERODYNAMIC AND FLIGHT MECHANICS	8

CLOSING CEREMONY
16:00-18.00 Room CLOISTER

SPECIAL SESSION
“Hystorical Evolution of Aerospace Science”

BEST PAPER AWARDS CERIMONY

AIDAA GENERAL ASSEMBLY: 18.00-19.30

SPECIAL DINNER (CLOISTER FACULTY): 19.30-21.30

FRIDAY

MORNING 8.30-15.00

Italian Air Force Historical Museum

Special visit to

Italian Air Force Historical Museum
at Vigna di Valle on Friday, September 13

Starting: 8.30 AM
Via del Colle Oppio,
near the Congress location (Engineering Faculty)

*To get on the free of charge conference bus, kindly offered by
Aeronautica Militare, registration is needed.
Limited seats are available.*

Contact secretariat: info@aidaa.it



PROGRAMME AT A GLANCE			
	Morning	Lunch	Afternoon
Monday September 9	8.30 – 9.30 Registration and Welcome Coffee 9.30- 10.45 Opening Ceremony Greetings to Delegates of the AIDAA Congress by ESA Astronaut Luca Parmitano - International Space Station , LEO orbit Coffee Break 11.30 - 13.00 Plenary Lectures Prof. Brian J. Cantwell, Stanford University, USA Prof. Oleg M. Alifanov, Moscow Aviation Institute (MAI, Russian Federation)	Lunch 13.00 – 14.00	14.00 – 16.30 TECHNICAL SESSIONS (1, 7, 13, 21, 23, 31, 42) SESSION 21: KEYNOTE PROF. FERRI M H ALIABADI Imperial College London (UK) SESSION 23: KEYNOTE PROF. MARCELLO ONOFRI Sapienza Università di Roma 18.00 - 20.00 Greetings from THE MAYOR OF ROME Sala della Protomoteca, Campidoglio Plenary Lecture: Dr.ssa Barbara Negri, Agenzia Spaziale Italiana
Tuesday September 10	9.00 - 9.30 Plenary Lecture Prof. Daniele Mortari, Texas A&M University 9.00 – 13.00 TECHNICAL SESSIONS (2, 22, 24&24BIS, 27, 29, 32) SESSION 29: KEYNOTE PROF. MENGU CHO Kyushu Institute of Technology, Kitakyushu, Japan	Lunch 13.00 – 14.00	14.00 – 19.00 TECHNICAL SESSIONS (4, 10, 12, 25, 28, 30)
Wednesday September 11	9.00 - 9.30 Plenary lecture Eng. Joseph Post, Federal Aviation Administration, Washington DC, USA 9.00 – 13.00 TECHNICAL SESSIONS (3, 8, 11, 18, 19, 39) 11.00 - 13.00 ROUND TABLE Coordinator Dott. Giuseppe Pagnano “RUOLO E ATTIVITÀ DEI DISTRETTI AEROSPAZIALI ITALIANI”	Lunch 13.00 – 14.00	14.00 – 17.00 TECHNICAL SESSIONS (5, 17, 20, 40, 41) SESSION 5: KEYNOTE: PROF. IGNAZIO CIUFOLINI Salento University, Lecce 15.30 - 18.00 Symposium “SPACE ECONOMY: WOMEN AS GAME CHANGER AND INNOVATOR” Coordinator Dott.ssa Annamaria Nassisi 19.00 - 23.00 SOCIAL DINNER BRANCACCIO PALACE
Thursday September 12	9.00 – 13.00 TECHNICAL SESSIONS (6, 14, 26, 33, 34, 36) SESSION 6: KEYNOTE PROF. FRANCESCO VENIALI Sapienza Università di Roma SESSION 26: KEYNOTE: PROF. LUCIANO IESS Sapienza Università di Roma	Lunch 13.00 – 14.00	14.00 – 16.00 TECHNICAL SESSIONS (9, 15, 37, 38) CLOSING CEREMONY 16.00 - 17.30 Special Session “Historical Evolution of Aerospace Science” BEST PAPER AWARDS CEREMONY 17.30 - 19.30: AIDAA GENERAL ASSEMBLY 19.30 - 21.30: SPECIAL DINNER (CLOISTER FACULTY)
Friday September 13	MORNING 8.30 – 15.00 Italian Air Force Historical Museum Visit at Vigna di Valle		

TECHNICAL SESSIONS SUMMARY

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3	STRUCTURES 3	Wedn.11 AM	46
4	COMPOSITES	Tues.10 PM	42
5	AEROSPACE STRUCTURES VALIDATION	Wedn.11 PM	56
6	MATERIALS	Thur.12 AM	63
7	ASTRODYNAMICS 1	Mond. 9 PM	21
8	ASTRODYNAMICS 2	Wedn.11 AM	47
9	AERODYNAMICS AND FLIGHT MECHANICS	Thur.12 PM	74
10	REMOTE SENSING 1	Tues.10 PM	41
11	REMOTE SENSING 2	Wedn.11 AM	48
12	ATTITUDE CONTROL	Tues.10 PM	40
13	NAVIGATION	Mond. 9 PM	20
14	ADVANCED ENERGY STORAGE AND PROPULSION SYSTEMS IN AERONAUTICS	Thur. 12 AM	67
15	ROTORCRAFTS	Thur. 12 PM	73
16	HISTORICAL EVOLUTION OF AEROSPACE SCIENCES	Thur. 12 PM	73
17	THE CHALLENGE OF THE SUBORBITAL TRANSPORTATION AND THE NEW SPACE ECONOMY	Wedn. 11 PM	55
18	AIR TRAFFIC MANAGEMENT EFFICIENCY IMPROVEMENTS THROUGH TRAJECTORY-BASED OPERATIONS: A DUAL PERSPECTIVE FROM THE US AND EUROPE	Wedn. 11 AM	45
19	HUMAN CENTRED DESIGN FOR PASSENGER'S ENHANCED COMFORT AND WELLBEING IN AIRCRAFT CABIN (part 1)	Wedn.11 AM	50
20	HUMAN CENTRED DESIGN FOR PASSENGER'S ENHANCED COMFORT AND WELLBEING IN AIRCRAFT CABIN (part 2)	Wedn. 11 PM	57
21	DAMAGE TOLERANCE OF COMPOSITE STRUCTURES: BEYOND THE STATE OF THE ART (part 1)	Mond. 9 PM	18
22	DAMAGE TOLERANCE OF COMPOSITE STRUCTURES: BEYOND THE STATE OF THE ART (part 2)	Tues.10 AM	31
23	THE STATUS AND PERSPECTIVES OF ROCKET PROPULSION RESEARCH IN ITALY (part 1)	Mond. 9 PM	19
24	THE STATUS AND PERSPECTIVES OF ROCKET PROPULSION RESEARCH IN ITALY (part 2)	Tues. 10 AM	28
24 BIS	LAUNCHERS	Tues.10 AM	29
25	THE STATUS AND PERSPECTIVES OF ROCKET PROPULSION RESEARCH IN ITALY (part 3)	Tues. 10 PM	39
26	PLANETARY EXPLORATION	Thur. 12 AM	68
27	RED PLANET EXPLORATION: RESEARCH STATUS OF LIFE SUPPORT SYSTEMS AND INFRASTRUCTURES FOR COLONIZATION OF MARS (part 1)	Tues. 10 AM	33
28	RED PLANET EXPLORATION: RESEARCH STATUS OF LIFE SUPPORT SYSTEMS AND INFRASTRUCTURES FOR COLONIZATION OF MARS (part 2)	Tues. 10 PM	38
29	NANOSATELLITE SYSTEMS AND MISSIONS (part 1)	Tues. 10 AM	32
30	NANOSATELLITE SYSTEMS AND MISSIONS (part 2)	Tues. 10 PM	37
31	LEGAL CHALLENGES OF NEW SPACE APPLICATIONS (part 1)	Mond. 9 PM	22
32	LEGAL CHALLENGES OF NEW SPACE APPLICATIONS (part 2)	Tues. 10 AM	30
33	SPACE DEBRIS	Thur.12 AM	66
34	INTERNATIONAL BALLOON STRATOSPHERIC ACTIVITIES	Thur. 12 AM	65
36	THE ITALIAN CONTRIBUTION TO THE ISS RESEARCH AND THE ASI EXPERIMENTS FOR THE MISSION BEYOND (part 1)	Thur. 12 AM	64
37	THE ITALIAN CONTRIBUTION TO THE ISS RESEARCH AND THE ASI EXPERIMENTS FOR THE MISSION BEYOND (part 2)	Thur. 12 PM	71
38	PARSIFAL PROJECT: A DISRUPTIVE AIRCRAFT FOR FUTURE AIR TRANSPORT	Thur. 12 PM	72
39	ADAPTIVE STRUCTURES FOR AERONAUTICAL APPLICATIONS (part 1)	Wedn.11 AM	49
40	ADAPTIVE STRUCTURES FOR AERONAUTICAL APPLICATIONS (part 2)	Wedn.11 PM	59
41	MOON EXPLORATION, THE GATEWAY TO THE STARS	Wedn.11 PM	58
42	THE WINSIC4AP EUROPEAN PROJECT	Mond. 9 PM	23



2019 AIAA
XXV INTERNATIONAL CONGRESS

Monday, September 9 2019

11.30-13.00 Room 1
Plenary Lectures:

PROF. BRIAN J. CANTWELL
Stanford University USA

“A hybrid propulsion solution for the Mars ascent vehicle”

PROF. OLEG M. ALIFANOV
Moscow Aviation Institute (MAI, Russian Federation)

***“Identification and verification of mathematical models
in the process of designing and testing aerospace vehicles”***

SESSION 1

STRUCTURES 1

Monday PM, September 9 2019, 14.00 – 16.30

Chair: Prof. Leonardo Lecce, Università degli Studi di Napoli Federico II

Room: 17

1. F. Marulo, P. Russo, C. Casale, S. Carducci
DYNAMIC BEHAVIOUR OF A STRAIGHTENED FUSELAGE FRAME BY USING A WIRE-ROPE DYNAMIC VIBRATION ABSORBER
2. A. Mazidi, A.H. Ghasemikaram, S.A. Fazelzadeh
FLUTTER ANALYSIS OF A BOX WING CONFIGURATION
3. A. Calvi, P. Bastia, M. Pérez Suárez, P. Neumann, A. Carbone
THE MECHANICAL VERIFICATION OF THE EUCLID SPACECRAFT: LOGIC AND FIRST TEST RESULTS
4. G. Bizzarro, M. Viscardi, V.M. Porpora
VIBRO-ACOUSTIC RESPONSE ANALYSIS AND EXPERIMENTAL VALIDATION OF A TURBOPROP INSULATION PACKAGE
5. Benedetti, V. Gulizzi, A. Milazzo
NONLOCAL LAYERWISE ADVANCED THEORIES FOR LAMINATED PLATES
6. D. Catelani
TOOLS AND METHODOLOGY TO ACHIEVE SIMULATION DRIVEN DESIGN AND THE IMPORTANCE OF LEVERAGING NUMERICAL ANALYSIS AND SOFTWARE KNOWLEDGE FROM THE VERY BEGINNING, STARTING AT UNIVERSITY
7. E. Turco, L. Dal Bo, P. Gardonio
SHUNTED ELECTRO-MAGNETIC TUNEABLE VIBRATION ABSORBER FOR BROADBAND VIBRATION CONTROL OF CYLINDRICAL STRUCTURES

SESSION 21

SYMPOSIUM 4

DAMAGE TOLERANCE OF COMPOSITE STRUCTURES: BEYOND THE STATE OF THE ART

Monday PM, September 9 2019, 14.00 – 16.30

Chair: Prof. Giuliano Allegri, University of Bristol, UK

Room: Cloister

KEYNOTE

Prof. Ferri M H Aliabadi

Department of Aeronautics, Imperial College London (UK)

ADVANCES IN STRUCTURAL HEALTH MONITORING FOR LIFE ASSESSMENT OF COMPOSITE AIRFRAMES

- 1. A. Russo, A. Sellitto, E. Vecchio, T. Stellato, A. Riccio, M. Damiano
FIBREGLASS WIND TURBINE ONE SHOT BLADE®: DAMAGE TOLERANT DESIGN**
- 2. S. Carrino, A. Castriota, R. Nobile, G. Scarselli
LAMB WAVES FOR FATIGUE DAMAGE DETECTION**
- 3. M. Pasquali, P. Gaudenzi
ANALYTICAL PREDICTION OF HIGH-VELOCITY IMPACT RESISTANCE OF PLANE AND CURVED THIN
COMPOSITE TARGETS**
- 4. G. Allegri, A. Melro, L.F Kawashita, S.R. Hallett
THROUGH-THICKNESS REINFORCEMENT FOR ENHANCED DAMAGE TOLERANCE OF COMPOSITE
STRUCTURES**



SESSION 23

SYMPOSIUM 5

THE STATUS AND PERSPECTIVES OF ROCKET PROPULSION RESEARCH IN ITALY

Monday PM, September 9 2019, 14.00 – 16.30

Chair: Prof. Francesco Nasuti, Sapienza Università di Roma – Eng. Alessandro Gabrielli, Agenzia Spaziale Italiana

Room: 1

KEYNOTE

Prof. Marcello Onofri
Dipartimento di Ingegneria Meccanica ed Aerospaziale,
Sapienza Università di Roma
PROPULSION RESEARCH
IN THE PERSPECTIVE OF NEW EUROPEAN LAUNCHERS

1. A. Gabrielli, E. D'Aversa, E. Cavallini, M. Pizzarelli

OVERVIEW ON THE ACTIVITIES PROMOTED BY THE ITALIAN SPACE AGENCY IN THE FIELD OF SOLID AND LIQUID PROPULSION

2. F. Battista

CIRA SPACE PROPULSION ACTIVITIES: ACTIVITIES AND OUTLOOK

3. L. Galfetti, F. Maggi, C. Paravan, S. Dossi, G. Colombo, A. Verga, S. Carlotti, R. Bisin, F. Piscaglia

AEROSPACE PROPULSION RESEARCH ACTIVITIES AT SPLAB. OVERVIEW AND RESULTS

4. L. Casalino, A. Conte, A. Ferrero, F. Masseni, D. Pastrone

ROCKET PROPULSION RESEARCH AT POLITECNICO DI TORINO: FROM HYBRID ROCKET ENGINES TO ADVANCED NOZZLES

5. D. Bianchi, M. Tindaro Migliorino, F. Nasuti

MODELING OF FLOW SURFACE INTERACTION IN HYBRID ROCKETS

6. F. Barato, Bellomo, A. Ruffin, M. Santi, E. Paccagnella, M. Franco, D. Pavarin

STATUS AND ACHIEVEMENTS OF THE HYDROGEN PEROXIDE CHEMICAL PROPULSION RESEARCH AT PADUA UNIVERSITY

SESSION 13

NAVIGATION

Monday PM, September 9 2019, 14.00 – 16.30

Chair: Prof. Giovanni Palmerini, Sapienza Università di Roma

Room: 10

1. G. Mattei, F. Scibona, L. Rosa, M. Lucchesini, A. Esposito, D. Tonelli
A NAVIGATION GRADE ITAR-FREE INS/GPS SYSTEM DESIGNED AND DEVELOPED IN ITALY
2. K. Dharmarajan , G.B. Palmerini
PRELIMINARY ANALYSIS AND PERFORMANCE EVALUATION OF THE XNAV TECHNIQUE
3. A. Escalona-Cabello, M.A. Martin-Prats, F. Bernelli-Zazzera
FEASIBILITY ANALYSIS OF GNSS NAVIGATION ON EARTH-MOON L2 HALO ORBIT
4. G. Valletta, T. Armando La Marca, G. Aliberti , L. Caruso, S. Cassese, M. De Riggi, S. Di Stefano, F. Forlingieri, I.A. Rubio A. Morrone, L. Pierro, M. Rigamonti, A. Renga, M. Grassi
SATELLITE-BASED AUGMENTATION OF GNSS SERVICES IN THE ARCTIC REGION: THE RUDOLPH PROJECT
5. G. Roggi, M. Giurato, M. Lovera
A COMPUTER VISION LINE-TRACKING ALGORITHM FOR UAV GNSS-AIDED GUIDANCE
6. C. Bettanini, M. Bartolomei, A. Aboudan , G. Colombatti
TESTING OF A CONTROLLED PARAFOIL WITH AIRDROP TESTS FROM UAV

SESSION 7

ASTRODYNAMICS 1

Monday PM, September 9 2019, 14.00 – 16.30

Chair: Prof. Giulio Avanzini, Università del Salento

Room: 11

1. N. Marmo

OPTIMIZATION OF LOW-THRUST TRAJECTORY FOR A MISSION TO THE ASTEROID 433 EROS WITH EARTH GRAVITY ASSIST

2. S. Proietti, M. Pontani

LONG-TERM ORBIT EVOLUTION OF DECOMMISSIONED GEOSTATIONARY SATELLITES

3. E. Fornari, M. Pontani

SIMPLE METHOD TO IDENTIFY FAMILIES OF CYCLING EARTH-MARS TRAJECTORIES

4. E.M. Leonardi, M. Pontani

OPTIMAL TWO- AND THREE-DIMENSIONAL EARTH-MOON ORBIT TRANSFERS

5. D. Nayak, S. Hebbar, S. Poornachandra, A. Agarwal

RECURRENT NEURAL NETWORK MODELLING FOR ORBIT PROPAGATION

SESSION 31

SYMPOSIUM 11

LEGAL CHALLENGES OF NEW SPACE APPLICATIONS

Monday PM, September 9 2019, 14.00 – 16.30

Chair: Prof. Sergio Marchisio, Sapienza Università di Roma

Room: 8

1. V. Iavicoli

WHEN SPACE SUSTAINABILITY DOESN'T MEET EARTH SUSTAINABILITY

2. G. Iana

SPACE REMEDIATION AS A KEY FOR SUSTAINABILITY IN OUTER SPACE

3. G.G. Nucera

EXPLORING THE LEGAL FRAMEWORK OF SPACE SITUATIONAL AWARENESS ACTIVITIES

4. A. Matteis

INTERNATIONAL COOPERATION AS A TOOL FOR PROMOTING ECONOMIC DEVELOPMENT AND FACILITATING ACCESS TO OUTER SPACE: THE EXAMPLE OF ITALY-KENYA AGREEMENTS GOVERNING THE BROGLIO SPACE CENTER

5. G. Ardito

DEVELOPING AN INTERNATIONAL REGIME FOR SPACE RESOURCES THROUGH THE LENSES OF THE LAW OF THE SEA: RECENT LESSONS FROM THE INTERNATIONAL SEABED AUTHORITY

SESSION 42

SYMPOSIUM 19

THE WINSIC4AP EUROPEAN PROJECT

Monday PM, September 9 2019, 14.00 – 16.30

Chair: Prof.ssa Caterina Grillo, Università degli Studi di Palermo

Room: 12

1. L. Liggio

THE WINSIC4AP EUROPEAN PROJECT AND ITS OUTCOMES FOR EFFICIENT AND COST-EFFECTIVE APPLICATIONS IN AVIONICS, AUTOMOTIVE, RAILWAY AND DEFENCE

2. A. Imbruglia, M. Saggio, S. Cascino, A. Minotti, S. Russo

WINSIC4AP: HIGH PERFORMANCE SIC POWER TECHNOLOGY FOR RELIABLE APPLICATIONS

3. F. Roccaforte, P. Fiorenza, F. Giannazzo, G. Greco, R. Lo Nigro, S. Rascunà, M. Saggio

ADVANCED PROCESSING AND CHARACTERIZATIONS FOR 4H-SIC POWER DEVICES

4. G. Consentino, F. Crupi, S. Reggiani, G. Meneghesso

ON THE REVERSIBLE THRESHOLD VOLTAGE SHIFT IN SIC POWER MOSFETs

5. G. Russo, M. Giuliani, P. Rosi

SIC BASED POWER PLANT AND AVIONICS

6. G. Coppola

CONSOLIDATING ELECTRIC TRANSPORT – HIGH EFFICIENCY SIC BASED CONVERTERS FOR FAST AND ULTRA-FAST CHARGING STATIONS



2019 AIAA XXV INTERNATIONAL CONGRESS

Tuesday AM, September 10 2019

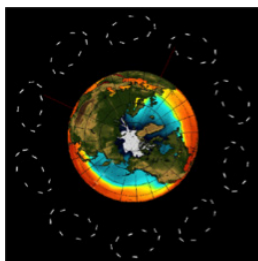
9.00-9.30

Plenary Lecture, Room: 1

PROF. DANIELE MORTARI

Texas A&M University - 3141 TAMU- USA

***“From Art to Science:
The Flower Constellations Theory Evolution”***



SESSION 2

STRUCTURES 2

Tuesday AM September 10 2019, 9.30 – 13.00

Chair: Prof. Ugo Galvanetto, Università degli Studi di Padova

Room: 17

1. T.W. Kim, M.Y. Jang

ANISOTROPIC FLOW FOR RICE LEAF-LIKE SURFACE PATTERN USING LASER GROOVING WITH POWDER

2. M. Grande, S. Cacace, A.G. Demir, G. Sala

FRACTURE AND FATIGUE BEHAVIOUR OF ALSI7MG0.6 PRODUCED BY SELECTIVE LASER MELTING: EFFECTS OF THERMAL-TREATMENTS

3. M. Eugeni, H. Elahi, F. Fune, L. Lampani, F. Mastroddi, G. Romano, P. Gaudenzi

EVALUATION OF PIEZOELECTRIC ENERGY HARVESTER BASED ON FLAG-FLUTTER

4. A. Casaburo, G. Petrone, V. Meruane, F. Franco, S. De Rosa

PREDICTION OF THE DYNAMIC BEHAVIOR OF PLATES IN SIMILITUDE USING MACHINE LEARNING METHODS

5. Xiong, M. Ferlauto, X.Q. Fan

DESIGN AND OPTIMIZATION OF AN INWARD-TURNING INLET WITH RECTANGULAR-TO- ELLIPSE SHAPE TRANSITION

6. S.F. Pitton, S. Ricci, C. Bisagni

ARTIFICIAL INTELLIGENCE TECHNIQUES IN DESIGN OPTIMIZATION OF VARIABLE STIFFNESS CYLINDRICAL SHELLS

7. M. Zaccariotto, G. Ongaro, T. Ni, P. Seleson, U. Galvanetto

COMPUTATIONAL METHODS COUPLING PERIDYNAMICS WITH CLASSICAL MECHANICS: OUT OF BALANCE FORCES IN OVERALL STRUCTURAL EQUILIBRIUM

8. D. Sacchetti, R. Bombardieri, J. Serafini, R. Cavallaro, G. Bernardini

ACTIVE FLUTTER SUPPRESSION FOR PRANDTL PLANE CONFIGURATION

9. R. Vescovini, V. Oliveri, D. Pizzi, L. Dozio, P.M. Weaver

PRE-BUCKLING AND BUCKLING RESPONSE OF COMPOSITE CURVILINEARLY STIFFENED PANELS



SESSION 24

SYMPOSIUM 5

THE STATUS AND PERSPECTIVES OF ROCKET PROPULSION RESEARCH IN ITALY

Tuesday AM September 10 2019, 9.30 – 11.30

Chair: Prof. Emanuele Martelli, Università della Campania L. Vanvitelli – Eng. M. Pizzarelli, Agenzia Spaziale Italiana

Room: 8

1. A. Torricelli, F. Nasuti, S. Pirozzoli

CONJUGATE HEAT TRANSFER ANALYSIS FOR ROCKET COOLING CHANNELS BY RANS AND DNSAP-PROACHES

2. G. Indelicato, P.E. Lapenna, D. Durigon, F. Creta

WALL HEAT TRANSFER SIMULATIONS IN SINGLE AND MULTI INJECTORSGCH₄/GOX ROCKET COMBUSTORS

3. P. Concio, M. Tindaro Migliorino, F. Nasuti

ESTIMATION OF THROAT HEAT FLUX IN LIQUID ROCKET ENGINES

4. M.G. De Giorgi, D. Fontanarosa, L. Francioso, C. De Pascali, A. Ficarella

PRELIMINARY EVALUATION OF A MEMS-BASED WATER PROPELLANT VAPORIZING LIQUID MICROTHUSTER FOR SMALL SATELLITES

5. A.E. Vinci, M.M. Saravia, L. Bernazzani, A. Ceccarini, F. Paganucci

AN IODINE FEEDING SYSTEM FOR HALL-EFFECT ELECTRIC PROPULSION

6. A. Binci, A. Marchetti, A. Adriani, F. Scortecci

DEVELOPMENT AND IMPLEMENTATION OF A NEW MODEL FOR THE ESTIMATION OF THE ION NUMBER DENSITY IN GRIDDED ION THRUSTERS PLUME

SESSION 24 bis

LAUNCHERS

Tuesday AM September 10 2019, 11.40 – 13.00

Chair: Prof. Dario Pastrone, Politecnico di Torino – Eng. Samantha Ianelli, Agenzia Spaziale Italiana

Room: 8

- 1. C. Colaianni, G. Lassourd, E. Cosson,
NEW ARIANE GROUP APPLICATIONS FOR ARIANE 6 ESR LAYOUT**
- 2. R. Mankbadi,
SIMULATION AND CONTROL OF LAUNCH VEHICLES NOISE**
- 3. R. Camussi, A. Di Marco, C. Stoica, M. Bernardini, F. Stella, F. De Gregorio, F. Paglia, L. Romano,
C. Milana, D. Barbagallo
SURFACE PRESSURE FLUCTUATIONS ON A SCALED-MODEL OF THE NEW VEGA-C LAUNCHER**
- 4. P.L. Vitagliano, F. De Gregorio, P. Roncioni, F. Paglia, C. Milana
AERODYNAMIC CHARACTERISATION OF VEGA-C LAUNCHER**



SESSION 32

SYMPOSIUM 11

LEGAL CHALLENGES OF NEW SPACE APPLICATIONS

Tuesday AM September 10 2019, 9.30 – 13.00

Chair: Prof. Sergio Marchisio, Sapienza Università di Roma

Room: 11

1. L. Bonventre

A LANDSCAPE AND MARKET ANALYSIS OF SPACE-RELATED PATENTS

2. A. Salmeri

A WAY FORWARD. REGULATING NEW SPACE ACTIVITIES THROUGH MULTI-STAKEHOLDER ADAPTIVE GOVERNANCE

3. P. Breccia

THE NEED FOR A SPACE TRAFFIC MANAGEMENT AND ITS LEGAL CHALLENGES

4. L. Di Lullo

FROM SPACE TO EARTH: ASSESSING THE LEGAL FRAMEWORK OF BIG DATA IN THE SPACE TECHNOLOGIES SECTOR

5. M. Gagliardi

NEW SPACE ACTIVITIES, SPACE DEBRIS AND ACTIVE DEBRIS REMOVAL: LEGAL ASPECTS AND CHALLENGES

6. A. Carlo, N. Giannakou

ACTIVE DEBRIS REMOVAL: THE LEGAL CHALLENGES AND THE WAY FORWARD

7. A.S. Martin

SOME LEGAL THOUGHTS RELATED TO FUTURE ON-ORBIT SERVICING ACTIVITIES

8. I. Grytsenko

SPACE REMEDIATION AS A KEY FOR SUSTAINABILITY IN OUTER SPACE

SESSION 22

SYMPOSIUM 4

DAMAGE TOLERANCE OF COMPOSITE STRUCTURES: BEYOND THE STATE OF THE ART

Tuesday AM, September 10 2019, 9.30 – 13.00

Chair: Prof. Giuliano Allegri, University of Bristol, UK

Room: 10

1. M.H. Nagaraj, J. Reine, R. Vaziri, E. Carrera, M. Petrolo

HIGH-FIDELITY DAMAGE ANALYSIS OF COMPOSITES USING A PLY-BASED CONTINUUM MODEL

2. M.H. Nagaraj, I. Kaleel, E. Carrera, M. Petrolo

CONTACT MODELLING OF COMPOSITE STRUCTURES USING ADVANCED STRUCTURAL THEORIES

3. E. Monaco, D. Boffa, F. Ricci

**COMPOSITE REINFORCED PLATES BUILT BY CO-INFUSION OR SECONDARY BONDING TECHNIQUES:
ANALYSES OF THE EFFECTS OF MANUFACTURING APPROACH ON COMPRESSION BEHAVIOR BY
MECHANICAL TESTS, NDI AND GUIDED WAVES BASED SHM**

4. D. Boffa, E. Monaco, F. Ricci, M. Barile, L. Lecce

**HYBRID STRUCTURAL HEALTH MONITORING ON COMPOSITE PLATES WITH EMBEDDED AND SEC-
ONDARY BONDED FIBER BRAGG GRATINGS ARRAYS AND PIEZOELECTRIC PATCHES**

5. S. Ghiasvand, A. Airolidi, A. Spini, M. Boiocchi, C. Mirani, P. Bettini

**EXPERIMENTAL AND NUMERICAL INVESTIGATION OF DAMAGE EVOLUTION IN CURVED COMPOS-
ITE LAMINATES**

SESSION 29

SYMPOSIUM 10

NANOSATELLITE SYSTEMS AND MISSIONS

Tuesday AM, September 10 2019, 9.30 – 13.00

Chair: Prof. Fabio Santoni, Sapienza Università di Roma

Room: 1

KEYNOTE

Prof. Mengu Cho

Kyushu Institute of Technology, Kitakyushu, Japan

**LEAN SATELLITE: DELIVERING SATELLITES' VALUES
WITH LOW COST AND SHORT TIME**

1. S. Ianelli, M. Albano, M. Di Clemente, A. Gabrielli, S. Cantoni, M. De Stefano Fumo, R. Votta, A. Fedele, R. Gardi, M. Cardi, F. Corradino, M. Villa, F. Carrai, F. Carubia

ENABLING NEW ORBIT SERVICES FOR MANNED AND UNMANNED SPACE VEHICLES WITH THE NEXT GENERATION OF DRONES: THE IPERDRONE PROGRAMME

2. R. Fortezza, A. Ceriello, D. De Simone, G. Di Costanzo, D. Castagnolo, C. Albanese, A. Vincenzi
U-DRAGON: UNIFIED - DISTRIBUTED ADVANCED GLOBAL OPERATIVE NETWORK FOR NANO AND MICRO SATELLITE OPERATIONS

3. F. Stesina, S. Corpino, D. Calvi, G. Saccoccia, J. Gonzales Del Amo, E. Bosch Borrás
DESIGN AND VALIDATION OF A CUBESAT TEST PLATFORM FOR THE VERIFICATION OF MINIATURIZED ELECTRIC PROPULSION SYSTEMS

4. S. Pirrotta, F. Piergentili, F. Santoni, V. Di Tana, L. Burderi, F. Fiore, M. Lavagna, J. Brucato
ASI CUBESAT-BASED MISSIONS FOR SCIENTIFIC INVESTIGATIONS

5. V. Stanzione, B. Sabbatinelli, D. Filippetto, F. Morsillo
EARTH OBSERVATION IN NEW SPACE ECONOMY: CONSTELLATIONS OF SMALL SATELLITES



SESSION 27

SYMPOSIUM 8

RED PLANET EXPLORATION: RESEARCH STATUS OF LIFE SUPPORT SYSTEMS AND INFRASTRUCTURES FOR COLONIZATION OF MARS

Tuesday AM, September 10 2019, 9.30 – 13.00

Chair: Eng. Nunzia Favaloro, (CIRA – Capua) – Eng. Raimondo Fortezza, Telespazio Spa

Room: Cloister

1. M. Balsamo, L.I. Popova, W. Pawlak, L. Pieroni, V. Zolesi, A. Donati

FOOD PRODUCTION IN SPACE TO SUSTAIN CREWS DEMANDS DURING THE EXPLORATION OF MARS

2. D. Billi, B. Gallego Fernandez, A. Napoli, C. Mosca, C. Fagliarone

EXPLOITATION OF EXTREME TOLERANT CYANOBACTERIA FOR ENABLING HUMAN OUTPOSTS ON MARS

3. A. Genova, D. Durante, V. Notaro

A PRELIMINARY MISSION DESIGN OF A PAIR OF SPACECRAFT TO INVESTIGATE THE MARTIAN CLIMATE AND INTERIOR

4. S. Proietti, S. Moscatello, M. Adami, A. Battistelli

INTEGRATION OF HIGHER PLANTS IN BLSS: TECHNOLOGICAL NEEDS FOR FULL USE OF PLANT VERSATILITY AND POTENTIAL IN FUTURE TEST FACILITIES AND SPACE MODULES.

5. M. Deffacis, L. Bramante, C. Picco, D. Bussi, M. Barrera, P. Franceschetti

THE MARS TERRAIN SIMULATOR: AN INDOOR ANALOGUE FACILITY FOR VALIDATION AND SIMULATION OF THE EXOMARS ROVER OPERATIONS AND IN SUPPORT TO THE EXOMARS SURFACE MISSION

6. G. Pontetti, A. Pontetti, M. Lemme, A. De Santis

MIG, MILITARY INNOVATIVE GREENHOUSES

7. R. Fortezza, A. Ceriello, D. De Simone, D. Schubert, P. Zabel, M. Bamsey, C. Zeidler, V. Vrakking

THE EDEN ISS FACILITY AS PLATFORM FOR PLANT EXPERIMENTS IN EXTREME ENVIRONMENT



2019 AIDAA+
XXV INTERNATIONAL CONGRESS

Tuesday PM, September 10 2019

14.00- 14.30
Room: Cloister

PROF. ALDO FREDIANI

Director "Aerotecnica Missili e Spazio"

DOTT.SSA SILVIA SCHILGERIUS

Senior Editor Applied Science, Springer Nature

***Presentation of the new edition of
"AEROTECNICA MISSILI E SPAZIO"***



SESSION 30

SYMPOSIUM 10

NANOSATELLITE SYSTEMS AND MISSIONS

Tuesday PM, September 10 2019, 14.30 – 19.00

Chair: Prof. Fabio Santoni, Sapienza Università di Roma

Room: 1

1. A. Bahu, D. Modenini, G. Curzi, P. Tortora

A DYNAMIC ATTITUDE TESTBED FOR CUBESATS

2. R. Dandwani, S. Khadtare, N. Mitti, H. Patil

PASSIVE ATTITUDE CONTROL USING A NEODYMIUM MAGNET AND VISCOUS-HYSTERETIC DAMPERS FOR RVSAT-1

3. S. Molinini, F. Stesina

ANALYSIS OF THE DOCKING PHASE BETWEEN TWO CUBESATS USING A PERMANENT-MAGNET DOCKING MECHANISM

4. F. Topputo

LUMIO CUBESAT: TOWARD A LUNAR SITUATIONAL AWARENESS

5. K. Thangavel, M. Parisse

AN ISOTHERMAL ANALYSIS OF 6UPOCKET CUBE SATELLITE

6. E. Giustini, A.R. Bibbo, F. Cacciotti, M. Mollicone, G. Sciscione, M. Zanna, F. Santoni, A. Delfini, R. Pastore, D. Amadio, M. Marchetti

DESIGN AND MANUFACTURING OF GALILEI CUBESAT: A NANO-SATELLITE FOR HIGH SCHOOL AND UNIVERSITY HANDS-ON EDUCATION

7. R. Dandwani, S. Khadtare, N. Mitti, H. Patil

COMPARATIVE RESEARCH ON PASSIVE MAGNETIC STABILIZATION OF NANOSATELLITES USING HYSTERESIS DISCS AND HYSTERESIS RODS

8. P. Marzioli, A. Gianfermo, L. Frezza, D. Amadio, A. Grossi, F. Curianò, M.G. Pancalli, E. Vestito, L. Gugliermetti, L. Nardi, E. Benvenuto, S. Pirrotta, F. Piergentili, F. Santoni

NANOSATELLITE MISSIONS AND DEVELOPMENT AT SAPIENZA S5LAB: 1KUNS-PF, LEDSAT, GREEN-CUBE

SESSION 28

SYMPOSIUM 8

RED PLANET EXPLORATION: RESEARCH STATUS OF LIFE SUPPORT SYSTEMS AND INFRASTRUCTURES FOR COLONIZATION OF MARS

Tuesday PM, September 10 2019, 14.30 – 19.00

Chair: Eng. Nunzia Favaloro, (CIRA – Capua) – Prof.ssa Stefania De Pascale, Università degli Studi di Napoli Federico II

Room: Cloister

1. L. Nardi, S. Piccirillo, G. Metelli, G. Corallo, E. Bennici, M. Potenza, F. Cavaliere, G. Mascetti, E. Benvenuto

“HORTEXTREME”. PROTECTED HORTICULTURE IN INFLATABLE FACILITIES, RESISTANT TO EXTREME CONDITIONS, FOR THE PRODUCTION OF HIGH NUTRITIONAL VALUE PLANTS: A FIELD EXPERIMENT IN THE AMADEE-18 MISSION

2. F. Nazzaro, S. Proietti, S. Moscatello, F. Fratianni, R. Coppola, P. Zabel, D. Schubert, P. Downey, M. Bennett, A. Battistelli

MICROBIAL BEHAVIOUR, FOOD SAFETY AND SPACE. THE EDEN-ISS PROJECT

3. S. De Pascale, C. Arena, G. Aronne, V. De Micco, A. Pannico, R. Paradiso, Y. Rouphael
PLANT BIOLOGY AND CROP PRODUCTION IN EXTRA-TERRESTRIAL ENVIRONMENTS: CHALLENGES AND OPPORTUNITIES

4. L. Narici, G. Reitz, C. Lobascio
INTEGRATED SIMULATIONS OF MARS FLIGHTS ON THE ISS

5. A. Delfini, F. Santoni, R. Pastore, F. Piergentili, M. Delfini, M. Marchetti, M. Albano, A. Vricella, R. Matassa
SPACE ENVIRONMENT INTERACTION ENGINEERING RESEARCH AT AEROSPACE SYSTEMS LABORATORY (LSA)

6. F. Santoni, F. Piergentili, S. De Pascale, L. Nardi, E. Benvenuto, G. Mascetti, S. Mari, P. Marzioli, L. Gugliermetti, L. Frezza, D. Amadio, A. Gianfermo, F. Curianò, S. Hadji Hossein, M.G. Pancalli, E. Vestito
GREENCUBE, A NANOSATELLITE TEST BED FOR PLANT CULTIVATION IN A MICROGRAVITY ENVIRONMENT, IN PREPARATION FOR MANNED MISSIONS TOWARDS MARS



SESSION 25

SYMPOSIUM 5

THE STATUS AND PERSPECTIVES OF ROCKET PROPULSION RESEARCH IN ITALY

Tuesday PM September 10 2019, 14.30 – 19.00

Chair: Prof. Luciano Galfetti, Politecnico di Milano – Eng. E. Cavallini, Agenzia Spaziale Italiana

Room: 8

1. E. Martelli, S. D'Alessandro, F. Nasuti

FLOW SEPARATION STABILITY IN DUAL BELL ROCKET NOZZLES

2. G.D. Di Martino, S. Mungiguerra, C. Carmicino, G. Gallo, R. Savino

MODELING OF PARAFFIN-BASED FUEL COMBUSTION IN HYBRID ROCKETS

3. C. Paravan, R. Bisin, A. Verga, L. Galfetti

REGRESSION RATE AND COMBUSTION EFFICIENCY IN A VORTEX-FLOW HYBRID ROCKET ENGINE

4. F. Ponti, S. Mini, A. Annovazzi

A SIMPLIFIED APPROACH TO PREDICT IGNITION TRANSIENT IN A SOLID ROCKET MOTOR USING ROBOOST SIMULATION TOOL

5. S. D'Alessandro, B. Favini, F. Nasuti

LOW-ORDER MODELING OF THERMOACOUSTIC INSTABILITIES IN LIQUID ROCKET ENGINES

6. S. Dossi, F. Maggi, C. Paravan, A. Verga, L. Galfetti

IGNITION OF HIGHLY REACTIVE ALUMINUM POWDERS FOR ROCKET PROPULSION

SESSION 12

ATTITUDE CONTROL

Tuesday PM, September 10 2019, 14.30 – 19.00

Chair: Prof. Giovanni Palmerini, Prof. Fabio Celani, Sapienza Università di Roma

Room: 10

1. M. Pontani, F. Celani

NEIGHBORING OPTIMAL GUIDANCE AND PROPORTIONAL DERIVATIVE ATTITUDE CONTROL APPLIED TO LOW-THRUST ORBIT TRANSFERS

2. G. Avanzini, D. Fattizzo, F. Nicassio, G. Scarselli

ATTITUDE DYNAMICS AND CONTROL OF A LARGE FLEXIBLE SPACE STRUCTURE BY MEANS OF A MINIMUM-COMPLEXITY MODEL

3. S. Meraglia, D. Invernizzi, M. Lovera

ACTIVE BALANCING SYSTEMS FOR ROTATING ORBITAL DEVICES

4. F. Angeletti, A. Stolfi, P. Gasbarri

LEARNING-BASED CONTROL OF A SPACECRAFT WITH SLOSHING PROPELLANT

5. D. Shravani, G.K. Goutham, R.S. Vasisth

NANO-SATELLITE ATTITUDE ESTIMATION MODEL WITH NEURAL NETWORKS

6. G. De Alteriis, R. Ruggiero, R. Schiano Lo Moriello, D. Accardo

ATTITUDE AND HEADING REFERENCE SYSTEM ASSEMBLED WITH REDUNDANT LOW-COST SENSORS FOR ADVANCED APPLICATIONS ON SMALL UNMANNED AIRCRAFT SYSTEMS

7. A.C. Rao, D. Hegde, N.K. Raj, C. Polur

DUAL NEURAL NETWORK CONTROLLER FOR MAGNETIC THREE-AXIS STABILIZATION

8. F. Celani, D. Lucarelli

SPACECRAFT ATTITUDE MOTION PLANNING ON SO(3) USING GRADIENT-BASED OPTIMIZATION: CASE STUDIES

9. C. Orlando

SIMPLE ADAPTIVE SHIMMY SUPPRESSION SYSTEM

10. G.K. Goutham, D. Shravani, A. Sourabha Kaverappa Mr. Parv Jain

ATTITUDE DETERMINATION IN NANO-SATELLITE USING SOLAR PANELS APPLYING STATISTICAL TIME DIVISION MULTIPLEXING

SESSION 10

REMOTE SENSING 1

Tuesday PM, September 10 2019, 14.30 – 19.00

Chair: Prof. Giovanni Laneve, Sapienza Università di Roma – Prof. Antonio Moccia, Università degli Studi di Napoli Federico II

Room: 11

1. G. Giardina

A COMBINED APPROACH TO MONITOR RAINFOREST DEFORESTATION

2. L. Piovani, L. Mazzer, M. Fronteddu, G. Carossino

POTENTIAL BENEFITS OF USING SATELLITE DATA IN PRECISION AGRICULTURE

3. V. Pampanoni, R. Shaik

DAILY FIRE HAZARD INDEX FOR THE PREVENTION AND MANAGEMENT OF WILDFIRES IN THE REGION OF SARDINIA

4. G. Laneve, R. Luciani, L. Fusilli, P. Marzialetti, R. Orsi, T.K. Alexandridis, I. Cherif, J. Suarez Beltran
ENHANCING FOOD SECURITY THROUGH THE AFRICULTURES PROJECT: DESIGN OF CROP SERVICE

5. O. Felix, C.O. Mito, G. Laneve, R. Luciani

OPERATION WILDFIRE DETECTION FOR TIMELY NOTIFICATION USING A GEOSTATIONARY SATELLITE: CASE OF KENYA

6. J.O. Ondieki, C.O. Mito, G. Laneve

MAPPING RADIOACTIVE MINERALS USING REMOTE SENSING: A CASE STUDY OF MRIMA HILL IN KWALE COUNTY, KENYA

7. L. Piovani, L. Mazzer, G. Garofalo

ANALYSIS OF THE INNOVATIONS IN EARTH OBSERVATION DATA EXPLOITATION

8. M.G. Daraio, R. Guarini, E. Lopinto

THE ASI PRISMA MISSION STATUS AND PERSPECTIVES



SESSION 4

COMPOSITES

Tuesday PM, September 10 2019, 14.30 – 19.00

Chair: Prof. Alberto Milazzo, Università degli Studi di Palermo – Prof. Fabrizio Ricci, Università degli Studi di Napoli Federico II

Room: 17

1. S. Paolillo, A.M. Grande

TOWARDS MULTIFUNCTIONAL FRPCS FOR AEROSPACE APPLICATIONS

2. A. Pagani, A.G. de Miguel, M.P. Lionetti, A.R. Sanchez-Majano, E. Carrera

GLOBAL/LOCAL SENSITIVITY ANALYSIS AND DESIGN OPTIMIZATION OF AEROSPACE COMPOSITE LAMINATES

3. A. Pagani, E. Carrera, E. Zappino, R. Azzara, A.G. de Miguel, M.P. Lionetti

STATIC AND DYNAMIC EXPERIMENTAL ANALYSIS OF A FULL-COMPOSITE VLA AIRCRAFT

4. M.P. Lionetti, A. Pagani, E. Carrera

DESIGN OPTIMIZATION OF A VLA COMPOSITE WING

5. A. Riccio, S. Saputo, A. Sellitto, F. Di Caprio

STRESS CONCENTRATION ANALYSIS OF COMPOSITE FUSELAGE SECTION INCLUDING PASSENGERS' DOOR AND WINDOWS CUT-OUTS.

6. F. Ricci, D. Boffa, T. Garulli, E. Monaco, D. Fanteria

CO-INFUSED AND SECONDARY BONDED COMPOSITE STIFFENED PANELS LOADED IN COMPRESSION: NUMERICAL ANALYSES AND EXPERIMENTAL TESTS IN LINEAR AND POST-BUCKLING REGIMES

7. M. Lo Cascio, A. Milazzo, I. Benedetti

VIRTUAL ELEMENT METHOD FOR COMPUTATIONAL HOMOGENIZATIONS OF UNIDIRECTIONAL FIBER-REINFORCED COMPOSITE MATERIALS

8. T. Lavaggi, F. Zaccardi, M. Gabriella Santonicola, S. Laurenzi

3D PRINTING OF MULTIFUNCTIONAL CARBON-BASED NANOCOMPOSITES

9. F. Zaccardi, L.F. Martucci, M. Gabriella Santonicola, S. Laurenzi

LAYERED HMWPE/EPOXY COMPOSITE MATERIAL WITH HIGH STRENGTH AND RADIATION SHIELDING CAPABILITIES



2019 AIDAA+ XXV INTERNATIONAL CONGRESS

Wednesday AM, September 11 2019

9.00-9.30

Plenary lecture, Room: 1

ENG. JOSEPH POST

Federal Aviation Administration, Washington, DC, USA

***“Trajectory-based operations:
the next revolution in Air Traffic Management”***

11.00-13.00

Round Table, Room: Cloister

Coordinator: ENG. GIUSEPPE PAGNANO

“Ruolo e attività dei distretti aerospaziali italiani”

SESSION 18

SYMPOSIUM 2

AIR TRAFFIC MANAGEMENT EFFICIENCY IMPROVEMENTS THROUGH TRAJECTORY-BASED OPERATIONS: A DUAL PERSPECTIVE FROM THE US AND EUROPE

Wednesday AM , September 11 2019, 9.30 – 13.00

Chair: Eng. Gabriele Enea, Air Traffic Control Systems, MIT Lincoln Laboratory, USA

Room: 1

1. G. Enea, J. Bronsvort, T. Reynolds, A. Lau, J. Jones

COMPARING AIR TRAFFIC FLOW MANAGEMENT TECHNIQUES BETWEEN USA, EUROPE AND AUSTRALIA

2. K. Noonan, J. Bonn

MODELING TRAJECTORY BASED OPERATIONS: A FAST-TIME SIMULATION

3. V. Cappellazzo, V. Treve, J. Toussaint, I. De Visscher

A DYNAMIC DEPARTURE INDICATOR TOOL ALLOWING OPTIMISED SPACING DELIVERY

4. A. Lau, B. Luhrs, B. Beckmann

BENEFIT ANALYSIS OF METEOREOLOGICAL TURBULENCE DATA FOR FLIGHT PLANNING.

5. R. Palumbo, E. Filippone, A. Vitale, G. Duca

ADVANCED GNSS-BASED SOLUTIONS TO SUPPORT GA OPERATIONS IN TMA

6. T. Marks, C. Zumegen

ASSESSING FORMATION FLIGHT BENEFITS ON TRAJECTORY LEVEL INCLUDING TURBULENCE AND GUST.



SESSION 3

STRUCTURES 3

Wednesday AM , September 11 2019, 9.30 – 13.00

Chair: Prof. Paolo Gasbarri, Sapienza Università di Roma

Room: 17

1. A. Stolfi, F. Angeletti, P. Gasbarri, M. Panella

A DEEP LEARNING STRATEGY FOR ON-ORBIT SERVICING VIA SPACE ROBOTIC MANIPULATOR

2. E. Panettieri, M. Picchi Scardaoni, M. Montemurro

DESIGN OF THE PRANDTLPLANE FUSELAGE DOORS: A GLOBAL-LOCAL MULTI-SCALE OPTIMIZATION STRATEGY.

3. M. Viscardi, M. Chimenti, G. Bronzone, G. Attanasio, G. Basile

STUDY OF THE ACOUSTIC FOOTPRINT OF CAPODICHINO AIRPORT BY THE USE OF THE AEDT SOFTWARE

4. F. Di Caprio, G. Petrone, F. Allocca, A. Zallo, S. Mespoulet

EXPERIMENTAL MODAL CHARACTERIZATION OF A METALLIC COMPONENT OF VEGA-C INTERSTAGE 2/3

5. M.G. Romano, M. Giugliano Auricchio, S. Russo, M. Guida, F. Marulo

STRUCTURAL ADHESIVE JOINTS APPLIED IN AIRCRAFT ENGINEERING

6. C. Grillo, F. Montano, E.M. La Rocca

PRELIMINARY DESIGN OF AN INOFFENSIVE FIXED-WING UNMANNED AERIAL SYSTEM

7. G. Coppotelli, J. Covioli

TIME DOMAIN OPERATIONAL MODAL ANALYSIS IN SUPPORT OF AEROELASTIC FLIGHT TESTING

8. A. Mazidi, A.S. Mirabbashi

FLUTTER ANALYSIS OF AN AIRCRAFT WING CARRYING AN UNBALANCE ENGINE

SESSION 8

ASTRODYNAMICS 2

Wednesday AM, September 11 2019, 9.30 – 13.00

Chair: Prof. Franco Bernelli Zazzera, Politecnico di Milano

Room: 10

1. A. Masat, M. Romano, C. Colombo

ORBITAL RESONANCE ANALYSIS IN MONTE CARLO SIMULATIONS FOR PLANETARY PROTECTION AND DEFENCE

2. A. Zavoli, L. Federici, B. Benedikter, G. Colasurdo

COMPARATIVE ANALYSIS OF GENETIC CROSSOVER OPERATORS FOR THE OPTIMIZATION OF IMPULSIVE MULTI-RENDEZVOUS TRAJECTORIES

3. M. Nicoli, C. Colombo, E.M. Alessi, M. Lara

FIRST ORDER ANALYTICAL SOLUTION FOR DISTANT RETROGRADE ORBITS IN THE CIRCULAR RESTRICTED THREE-BODY PROBLEM

4. G. Borelli, M. Nugnes, C. Colombo

LOW THRUST MULTIPLE REVOLUTION TRANSFER DESIGN USING ARTIFICIAL POTENTIAL GUIDANCE IN THE PHASE SPACE

5. S. Sgubini, G.B. Palmerini

FAST ANALYTICAL EVALUATION OF NEAR-KEPLERIAN ORBIT EVOLUTION IN MULTIPLE LAUNCH RELEASE

6. Avanzini, F. Convertino

SHAPE-BASED APPROACH FOR PRELIMINARY ANALYSIS OF LOW-THRUST MANEUVERS AND ORBIT DECAY TRAJECTORIES

SESSION 11

REMOTE SENSING 2

Wednesday AM, September 11 2019, 9.30 – 13.00

Chair: Prof. Giovanni Laneve, Sapienza Università di Roma – Prof. Antonio Moccia, Università degli Studi di Napoli Federico II

Room: 11

1. S. Pignatti, R. Casa, G. Laneve, S. Pascucci, A. Palombo

PRISMA HYPERSPECTRAL IMAGERY TO ENHANCE THE RETRIEVAL OF LAND SURFACE VARIABLES

2. L. Mazzer, L. Piovani, M.Z. Kuzmanovic, J. Petrovic

DEVELOPING AND MONITORING SMART CITIES: THE POTENTIAL OF EARTH OBSERVATION DATA

3. M. Grasso, A. Renga, M.D. Graziano, A. Moccia

DISTRIBUTED SAR IN PERMANENT SCATTERER INTERFEROMETRY: EXPECTED CONTRIBUTION AND PERFORMANCE

4. A. Renga, G. Fasano, M. Grasso, M.D. Graziano, M. Grassi, A. Moccia

CONCEPTS FOR SPACE DEMONSTRATION OF A DISTRIBUTED SAR BY FORMATION FLYING SATELLITES

5. M. Orsi, F. Feraco, M. Boffadossi, M. Marro, R. Marino, P. Salizzoni

DIRECT NUMERICAL SIMULATIONS AND MODELLING OF POLLUTANTS DISPERSION AND MIXING PROCESSES

6. F. Dell'Olio, G. Brunetti, C. Galeone, D. Filippetto, Sasanelli, V. Stanzione, M. Armenise, C. Ciminelli

MICROPHOTONIC SUB-SYSTEMS FOR SYNTHETIC APERTURE RADAR PAYLOADS



SESSION 39

SYMPOSIUM 18

ADAPTIVE STRUCTURES FOR AERONAUTICAL APPLICATIONS

Wednesday AM, September 11 2019, 9.30 – 13.00

Chair: Prof. Rosario Pecora (Università degli Studi di Napoli “Federico II”), Prof. Sergio Ricci (Politecnico di Milano), Eng. Antonio Concilio (CIRA- Capua)

Room: 8

1. R.M. Botez

ADAPTIVE WING DESIGN NOVEL MULTIDISCIPLINARY METHODOLOGIES

2. Z. Zhang, A. De Gaspari, S. Ricci

COMPARISON BETWEEN DENSITY-BASED AND LOAD-PATH-BASED METHOD IN VARIOUS CAMBER AEROFOIL DESIGN

3. R. Pecora, F. Amoroso

MORPHING WING FLAPS FOR LARGE CIVIL AIRCRAFT: THE CLEAN SKY-GRA CHALLENGE

4. F. Rea, F. Amoroso, R. Pecora

STRUCTURAL DESIGN OF A THREE-MODAL CAMBER MORPHING WING FLAP FOR LARGE CIVIL AIRCRAFT APPLICATIONS

5. M. Barile, G. Amendola, V. Ingenito, G. Barile, M. Migliaccio, L. Lecce

DEVELOPMENT OF A MORPHING WING CONCEPT FOR THE SEAGULL A/C - THE NEXT GENERATION MARIN-AIR VEHICLE

6. S. Ameduri, A. Concilio, B. Galasso, BLADE MORPHING: DEVELOPMENT PATH OF A SMA BASED BLADE TWIST ARCHITECTURE

7. B. Galasso, R. Fauci

PRELIMINARY TRADE-OFF STUDY OF DEPLOYMENT SYSTEMS FOR USV-3 UNMANNED SPACE RE-ENTRY VEHICLE



SESSION 19

SYMPOSIUM 3

HUMAN CENTRED DESIGN FOR PASSENGER'S ENHANCED COMFORT AND WELLBEING IN AIRCRAFT CABIN

Wednesday AM, September 11 2019, 9.30 – 11.00

Chair: Prof.ssa Francesca De Crescenzo, Università di Bologna

Room: Cloister

1. F. De Crescenzo, S. Piastra, S. Bagassi
EXPERIMENTAL PROCEDURES FOR PRELIMINARY USER CENTERED EVALUATION OF REGIONAL AIRCRAFT CABIN INTERIORS IN VIRTUAL REALITY
2. M. Sharafkhani, S. Cobb, E. Argyle, P. Tennent
IMPROVING AIRCRAFT PASSENGERS' HEALTH AND COMFORT THROUGH VIRTUAL REALITY APPLICATIONS
3. S. Valvano, A. Alaimo, C. Orlando
SOUND TRANSMISSION ANALYTICAL SOLUTION OF PASSIVEDAMPED MULTILAYERED PLATE STRUCTURES
4. M.C. Moruzzi, M. Cinefra, E. Carrera, M. Barbarino, P. Vitiello, S. Bagassi
VIBROACOUSTIC ANALYSIS IN THE CABIN OF A REGIONAL TURBOPROP WITH INNOVATIVE MATERIALS BY ACTRAN
5. M. Guida, P. Leoncini
COMFORT ASSESSMENT OF AIRCRAFT INTERIORS IN A VIRTUALIMMERSIVE ENVIRONMENT
6. R. Lombardi, P. Vitiello, M. Barbarino, G. Petrone, M. Cinefra, C. Colangeli
SOUND QUALITY OPTIMIZATION OF A TURBO-PROP AIRCRAFT CABIN THROUGH PASSIVE TECHNOLOGIES



ROUND TABLE

RUOLO E ATTIVITÀ DEI DISTRETTI AEROSPAZIALI ITALIANI

Wednesday AM, September 11 2019, 11.00 – 13.00

Coordinator: Eng. Giuseppe Pagnano

Room: Cloister

Participating Regions:

PIEMONTE : Tom Dealessandri

LOMBARDIA : Angelo Vallerani

EMILIA ROMAGNA : Gaetano Bergami

UMBRIA : Alessandro Castagnino

PUGLIA : Giuseppe Acierno

CAMPANIA : Luigi Carrino

SARDEGNA : Giacomo Cao

CTNA: Cristina Leone



2019 **AIDAA**→
XXV INTERNATIONAL CONGRESS

Wednesday PM , September 11 2019

15.30-18.00

Symposium, Room: Cloister

Coordinator: DOTT.SSA ANNAMARIA NASSISI

“Space economy: women as game changers and innovators”



Women in Aerospace Europe WIA-E

SESSION N. 17

SYMPOSIUM N. 1

THE CHALLENGE OF THE SUBORBITAL TRANSPORTATION AND THE NEW SPACE ECONOMY

Wednesday PM, September 11 2019, 14.00- 17.00

Chair: Eng. Giovanni Di Antonio, ENAC - Ente Nazionale per l'Aviazione Civile

Room: 1

1. F. Santoro, C. Romanelli

INFRASTRUCTURES AND OPERATIONS FOR A COMMERCIALLY SUSTAINABLE SUBORBITAL SPACE-FLIGHT INITIATIVE AND FUTURE DEVELOPMENTS IN THE ITALIAN TERRITORY.

2. G. Di Antonio, M. Sandrucci

A PERFORMANCE-BASED APPROACH FOR OCCUPANTS SAFETY IN SUBORBITAL TRANSPORTATION.

3. S. Berardi, Pandolfi

SPACEPORT IN ITALY: SITE IDENTIFICATION AND DEFINITION OF REGULATORY REQUIREMENTS

4. G. Enea, J. Jones, J. McMillon, T. Reynolds

ASSESSING THE AIR TRANSPORTATION SYSTEM BENEFITS OF DECISION SUPPORT TOOLS FOR COMMERCIAL SPACE OPERATIONS

5. G. Catalano Sgrosso

SUBORBITAL FLIGHTS, THE POINT OF VIEW OF THE JURIST

6. N. Viola, R. Fusaro, B. Saracoglu, C. Schram, V. Grewe, M. Marini, R. Scigliano, S. Hernandez, D. Hauglustaine, C. Fureby

STRATOFly ACADEMY: INSPIRE YOUNG GENERATIONS AND BE INSPIRED BY NEW IDEAS

7. R. Fusaro, N. Viola

STRATOFly MR3 VEHICLE CONFIGURATION

8. N. Viola, R. Fusaro, B. Saracoglu, C. Schram, V. Grewe, J. Martinez, M. Marini, S. Hernandez, K. Lammers, A. Vincent, D. Hauglustaine, B. Liebhardt, F. Linke, C. Fureby

MAIN CHALLENGES AND GOALS OF THE H2020 STRATOFly PROJECT

SESSION N. 5

AEROSPACE STRUCTURES VALIDATION

Wednesday PM, September 11 2019, 14.00 – 17.00

Chair: Prof. Francesco Marulo, Università degli Studi di Napoli Federico II

Room: 10

KEYNOTE

Prof. Ignazio Ciufolini

Dipartimento di Ingegneria dell'Innovazione

University of Salento, Lecce and Centro Fermi, Rome - Italy

SATELLITE LASER-RANGING AS PROBE OF FUNDAMENTAL PHYSIC

1. F. Marulo, P. Russo, C. Casale, G. Carducci

DESIGN, MANUFACTURING AND VALIDATION OF A TEST FACILITY FOR TRANSMISSION LOSS MEASUREMENT

2. C. Casale, T. Polito, V. Trifari, M. Di Stasio, P. Della Vecchia, F. Nicolosi, F. Marulo

IMPLEMENTATION OF A NOISE PREDICTION SOFTWARE FOR CIVIL AIRCRAFT APPLICATIONS

3. G. Sindoni, C. Paris, I. Ciufolini

VIBRATION TESTS OF A CUBE CORNER REFLECTOR ASSEMBLY OF LARES2 SATELLITE

4. D. Rigamonti, P. Bettini, L. Di Landro, G. Sala

DEVELOPMENT OF A SMART-HINGE BASED ON SHAPE MEMORY ALLOYS

5. I. Ciufolini, A. Paolozzi, C. Paris, G. Sindoni, S. Vempati

HOLOGRAPHIC INTERFEROMETRY FOR MEASURING DISPLACEMENTS OF LARES 2 SATELLITE COMPONENTS

6. M. Lomasto, M. Viscardi

VIBRO-ACOUSTIC INVESTIGATION OF MILITARY SHELTER SYSTEM

SESSION N. 20

SYMPOSIUM N.3

HUMAN CENTRED DESIGN FOR PASSENGER'S ENHANCED COMFORT AND WELLBEING IN AIRCRAFT CABIN

Wednesday PM, September 11 2019, 14.00 – 15.30

Chair: Prof.ssa Francesca De Crescenzo, Università di Bologna

Room: Cloister

- 1. P. Russo, F. Branda, T. Polito, F. Marulo, M. Guida, J. Passaro, B. Vitolo D. Di Maio
DESIGN AND DEVELOPMENT OF A NEW CONCEPT FOR TERMOACOUSTIC INSULATION BLANKETS,
IN CIVIL AIRCRAFT APPLICATIONS**
- 2. A. Alaimo, A. Esposito, F. Lo Iacono, G. Navarra, C. Orlando
AIRCRAFT PASSENGER WHOLE BODY VIBRATION ANALYSIS**
- 3. D. Bianco, V. Giannella, C. Colangeli, G. Petrone, R. Citarella, F. Branda, M. Barbarino
EXPERIMENTAL INVESTIGATION ON OPTIMISED AIRCRAFT SEAT HEADRESTS**
- 4. A. Di Salvo, C. Germak
THE EXTENDED COMFORT. ANALYSING THE FLIGHT JOURNEY THROUGH A DESIGN-ORIENTED AP-
PROACH**
- 5. C. Germak, A. Di Salvo
COLOURS AND AIRCRAFT INTERIORS. DESIGN SCENARIOS FOR A REGIONAL AIRCRAFT CABIN**

SESSION 41

SYMPOSIUM N. 12

MOON EXPLORATION, THE GATEWAY TO THE STARS

Wednesday PM, September 11 2019, 14.00 – 17.00

Chair: Eng. Giuseppe Reibaldi, Eng Maurizio Fagnoli, Moon Village Association

Room: 17

1. G. Reibaldi

TOWARDS THE MOON VILLAGE IMPLEMENTATION

2. C. Massagli

MOON MISSION(s) ITALIAN STRATEGY AND IMPACT AT INSTITUTIONAL LEVEL

3. V. Aloia, I. Verhaaf

FORWARD TO THE MOON: LEGAL CHALLENGES RELATED TO THE LONG-TERM SUSTAINABILITY OF THE MOON AND THE LUNAR ORBITAL ENVIRONMENT

4. F. Nicoletti

MOON MISSION(s) DIPLOMACY

5. F. Fontanot, C. Bettanini Fecia Di Cossato

GRAVITATIONAL EFFECTS ON LOW LUNAR ORBITS

6. G. Viriglio

MOON MISSION(s) STRATEGIC, INDUSTRIAL, SCIENTIFIC AND SOCIAL BENEFITS

7. C. Leone

MOON MISSION(s) AS RENAISSANCE AND OPPURTUNITY FOR LARGE SPACE INDUSTRY

8. F. Massobrio

MOON EXPLORATION, THE GATEWAY TO THE STARS

9. G. Corini

MOON MISSION(s) AS AN OPPORTUNITY FOR SME SPACE PLAYERS



ROUND TABLE WITH THE SPEAKERS AND PUBLIC:

THE MOON VILLAGE CHALLENGES AND OPPORTUNITIES

SESSION 40

SYMPOSIUM N. 18

ADAPTIVE STRUCTURES FOR AERONAUTICAL APPLICATIONS

Wednesday PM, September 11 2019, 14.00 – 17.00

Chair: Prof. Rosario Pecora (Università degli Studi di Napoli “Federico II”), Prof. Sergio Ricci (Politecnico di Milano), Eng. Antonio Concilio(CIRA, Capua)

Room: 8

1. E. Villa

DAMPING PROPERTIES OF NiTi AND NiTiCu SMA SAMPLES: CORRELATION WITH MICROSTRUCTURE AND PERSPECTIVES IN AEROSPACE AND AERONAUTIC APPLICATIONS

2. V. Cavalieri, A. De Gaspari, S. Ricci

AN OPTIMIZATION PROCEDURE FOR THE OPTIMAL DESIGN OF MORPHING DEVICES

3. A. Concilio, I. Dimino, S. Ameduri, R. Pecora, F. Amoroso, S. Ricci, A. De Gaspari

AN ITALIAN EXPERIENCE ON MORPHING AIRCRAFT SYSTEMS

4. A. Airoldi, P. Bettini, M. Boiocchi, D. Rigamonti

ACTUATED COMPOSITE CORRUGATED LAMINATES FOR MORPHING AERODYNAMIC SURFACES

5. I. Dimino, A. Concilio, M. Arena, M.C. Noviello, R. Pecora

MECHANICAL SYSTEMS FOR MORPHING WING STRUCTURES

6. M.C. Noviello, F. Amoroso, R. Pecora, I. Dimino, A. Concilio

AEROELASTIC STABILITY ASSESSMENT OF A CS-25 CATEGORY AIRCRAFT EQUIPPED WITH MORPHING WING DEVICES

7. M. Arena, F. Amoroso, R. Pecora

ACSIS (ACTUATION, CONTROL & SENSING INTEGRATED SYSTEM) FOR MORPHING STRUCTURES

SYMPOSIUM 6

“SPACE ECONOMY: WOMEN AS GAME CHANGERS AND INNOVATORS”

Wednesday PM, September 11 2019, 15:30 - 18:00

Chair: *Annamaria Nassisi, Director of Communication for Women In Aerospace Europe (WIA-E) and Manager Strategic Marketing for Thales Alenia Space*

Room: *Cloister*

16:00 – WIA Europe Welcome

Annamaria Nassisi, Manager Strategic Marketing Thales Alenia Space, Chair a.i. and Director of Communication WIA Europe

16:10 – COMMERCIAL EXPLOITATION OF FLIGHT-PROVEN HARDWARE FOR LIFE SCIENCE INVESTIGATIONS IN SPACE

Example of women role in space company

E. Carruba, L.I. Popova, W. Pawlak, A. Tortora (Kayser Italia)

16:30 – INSPIRING TALK: WOMEN AND MEN IN LEADING SPACE

moderator: Nassisi Annamaria

Presentation of unique insights and gained experiences

1. Amelia Ercoli Finzi, Scientist and Aerospace Engineer
2. Maria Cristina Falvella, ASI – Responsabile Unita' Strategie e Politica Industriale
3. Maria Sabrina Sarto, Pro-Rettore alle Infrastrutture e Strumenti per la Ricerca di Eccellenza and Direttore Dipartimento Ingegneria Astronautica, Elettrica, Energetica (DIAEE),
4. Luisa Riccardi, “Vice Capo Gabinetto” of Minister of Defence and Member of ASI CdA
5. Andrea Sommariva , Director of SEALAB Bocconi
6. Ersilia Vaudo Scarpetta, Chief Diversity Officer of ESA
7. Lorenzo D’Onghia, ASAS President
8. Luca Rossetini, AIPAS President

17:15 – Q&A

18:00 – Closure



2019 AIDAA+ XXV INTERNATIONAL CONGRESS

Thursday AM, September 12 2019





SESSION 6

MATERIALS

Thursday AM, September 12 2019, 9:30-13:00

Chair: Prof. Erasmo Carrera – Prof. Giacomo Frulla, Politecnico di Torino

Room: 17

KEYNOTE

Prof. Francesco Veniali

**Dipartimento di Ingegneria Meccanica ed Aerospaziale,
Sapienza Università di Roma**

ASSEMBLY, NON ASSEMBLY, SELF ASSEMBLY IN ADDITIVE MANUFACTURING FOR AEROSPACE APPLICATION

1. E. Cestino, G. Frulla, V. Sapienza, L. Di Ianni, P. Lavecchia, G. Maritano, M. Ferrara, A. Frisoli, A. Michelotti

ADDITIVE MANUFACTURING OF COMPOSITE TOOLING IN RPAV PRODUCTION

2. M. Costanzi

PRODUCTION OF AEROSPACE – GRADE TITANIUM-6ALUMINUM-4VANADIUM BARS BY SKULL MELTING + VAREMELTING

3. M.F. Starace, S.D. Orlando, F. Marulo, M. Guida

MATERIAL DESIGN ALLOWABLES FEM PREDICTION OF A TWILL WOVEN FABRIC IN A DATA VARIABILITY CONTEXT

4. G. Frulla, E. Cestino

EQUIVALENT MATERIAL IDENTIFICATION FOR COMPLETE SIMILARITY IN SCALED-MODEL TESTS

5. Benedetti, V. Gulizzi, A. Milazzo

A BOUNDARY ELEMENT FORMULATION FOR MICROMECHANICAL HOMOGENIZATION OF POLY-CRYSTALLINE MATERIALS WITH PIEZOELECTRIC COUPLING

6. A. Zappino, A. Pagani, M. Petiti, L. Micali, M. Filippi, E. Carrera

SIMULATION AND TESTING OF 3D PRINTED CARBON FIBER REINFORCED AERONAUTICAL COMPONENTS

7. A. Anwar, A. Delfini, L. Bassiouny, R. Pastore, F. Santoni, M. Marchetti

INFLUENCE OF SPACE ENVIRONMENT ON THE FIBER REINFORCED NANO COMPOSITE MATERIAL PERFORMANCE

SESSION 36

Symposium 16

THE ITALIAN CONTRIBUTION TO THE ISS RESEARCH AND THE ASI EXPERIMENTS FOR THE MISSION BEYOND

Thursday AM, September 12 2019, 9:30 – 13:00

Chair: Eng. Giovanni Valentini – Eng. Marino Crisconio, Agenzia Spaziale Italiana

Room: 1



THE MISSION BEYOND

Gabriele Mascetti – Head of Human Spaceflight Department (ASI)

1. V. Di Tana, C. Piacenza, P. Lepore, D. Castagnolo, R. Fortezza, G. Valentini, M. Crisconio, G. Mascetti
MISSION BEYOND: THE UTISS TEAM TO SUPPORT THE ITALIAN EXPERIMENTS FOR THE INTERNATIONAL SPACE STATION

2. G. Biolo, F.G. Di Girolamo, N. Fiotti, R. Situlin, E. Carrubba, C. Piacenza, P. Lepore, R. Fortezza, G. Valentini, G. Mascetti, S. Piccirillo
MISSION BEYOND: THE NUTRISS EXPERIMENT ON BOARD THE INTERNATIONAL SPACE STATION

3. A. Moleti, A. D'Amico, M.P. Orlando, G. Pennazza, M. Santonico, A. Zompanti, R. Pezzilli, G. Zupo, R. Sisto, L. Cerini, F. Sanjust, S. Iarossi, M. De Luca, F. Lo Castro, M. Deffacis, M. Trichilo, A. Crisafi, V. Di Tana, C. Piacenza, P. Lepore, D. Castagnolo, S. Piccirillo, G. Valentini, G. Mascetti
MISSION BEYOND: THE ACOUSTIC DIAGNOSTICS EXPERIMENT ON BOARD THE INTERNATIONAL SPACE STATION

4. C. Casalone, E. Berrone, E. Vallino Costassa, C. Corona, F. Cardone, S. Sirigu, A. Crisafi, C. Piacenza, P. Lepore, D. Castagnolo, M. Crisconio, S. Piccirillo, G. Valentini, G. Mascetti
MISSION BEYOND: THE AMYLOID AGGREGATION EXPERIMENT ON BOARD THE INTERNATIONAL SPACE STATION

5. A. Belov, G. Cambiè, M. Casolino, C. Giammanco, P. Klimov, A. Marcelli, L. Marcelli
STUDY OF TERRESTRIAL AND COSMIC UV EMISSIONS FROM THE INTERNATIONAL SPACE STATION WITH THE MINI-EUSO TELESCOPE

6. A.M. Rizzo, S. Zava, G. Galoforo, F. Ferranti, C. Pacelli, G. Valentini, R. Fortezza, F. Ingioisi, M. Balsamo, A. Bardi, A. Norfini, S. Cartocci, M. Monici
THE EDUCATIONAL EXPERIMENT XENOGRIS: GROWTH AND REGENERATION OF XENOPUS LAEVIS TADPOLES ON THE ISS

7. S. Ferraris, P. Pellegrino, A. Gily, P. Lanza
METERON ANALOG-1 ESA EXPERIMENT: ISS AS TESTBED FOR TELEOPERATION OF ROBOTIC AGENTS ON PLANETARY SURFACE

SESSION 34

SYMPOSIUM 15

INTERNATIONAL BALLOON STRATOSPHERIC ACTIVITIES

Thursday AM, September 12 2019, 9:30 – 13:00

Chair: Eng. Marta Albano, Dott.sa Angela Volpe, Agenzia Spaziale Italiana

Room: Cloister

1. M. Albano, A. Gabrielli, D. Spoto

HEMERA: THE INTERNATIONAL STRATOSPHERIC BALLOONS COMMUNITY AND NEW TECHNOLOGIES

2. A. Volpe, M. Albano, S. Masi, P. de Bernardis, E. Tommasi, G. Polenta, D. Spoto, OLIMPO and LSPE collaborations

OLIMPO & LSPE/SWIPE MISSIONS: INNOVATIVE INSTRUMENTATIONS FOR ASTROPHYSICAL OBSERVATIONS

3. S. Fineschi, G. Capobianco, G. Massone, G. Nicolini, L. Zangrilli, F. Landini, M. Pancrazzi, M. Romoli
CORMAG - OBSERVATIONS OF THE SOLAR CORONA FROM STRATOSPHERIC BALLOON

4. L. Natalucci, S. Lotti, F. Nuccilli, Vertolli, U. Zannoni

DEVELOPMENT OF PROTOTYPE FOR GAMMA-RAY SENSOR AND TECHNOLOGICAL TESTS.

5. Frassetto, L. Cocola, V. DaDeppo, L. Poletto, P. Zuppella

HIGH SIGNAL-TO-NOISE RATIO SPECTROMETER BASED ON STATIC FOURIER TRANSFORM INTERFEROMETER (FOR AN HEMERA BALLOON FLIGHT)

6. F.C. Bettanini, P. Fiorentin, M. Burigana, E.G. Bonechi, M. Ghedin, A. Aboudan, G. Colombatti
DESIGN AND TEST OF AN AUTONOMOUS INSTRUMENT FOR MONITORING LIGHT POLLUTION FROM BALLOONS

7. V. Della Corte, A. Rotundi, V. Liuzzi, P. Palumbo, Z. Dionnet

DUSTER: COLLECTION AND LABORATORY ANALYSIS OF STRATOSPHERIC DUST

8. L. Di Palo, V. Bandini, E. Bedetti, G. Broggi, P. Celesti, L. Collettini, D. Di Ienno, R. Garofalo, F. Iovanna, G. Mattei, A. Gianfermo, P. Marzioli, F. Piergentili, F. Santoni

TESTING A VOR-BASED POSITION AND ATTITUDE DETERMINATION SYSTEM IN THE STRATOSPHERE: THE TARDIS EXPERIMENT

9. M. Gemignani, S. Marcuccio

FLIGHT CAMPAIGN RESULTS AND PROSPECTS OF HIGH ALTITUDE BALLOONS FOR LOW COST SPACECRAFT TECHNOLOGY TESTING

10. Marzioli, Gianfermo, Frezza, Amadio, Santoro, Romanelli, Santoni, Piergentili

STRAINS: A STRATOSPHERIC EXPERIMENT FOR INNOVATIVE TRACKING SYSTEMS TESTING

11. Giulia Mantovani

THE HEMERA INFRASTRUCTURAL E.U. PROGRAMME: EPO ACTIVITIES

SESSION 33

SYMPOSIUM 14

SPACE DEBRIS

Thursday AM, September 12 2019, 9:30 – 13:00

Chair: Prof. Fabrizio Piergentili, Sapienza Università di Roma

Room: 10

- 1. A. Nocerino, R. Opromolla, M. Grassi, G. Fasano, G. Rufino
LIDAR-BASED RELATIVE NAVIGATION IN CLOSE-PROXIMITY OF UNCOOPERATIVE KNOWN SPACE-CRAFT**
- 2. M. Losacco, M. Massari, P. Di Lizia, G. Bianchi, G. Pupillo, A. Mattana, G. Naldi, C. Bortolotti, M. Roma, M. Schiaffino, F. Perini, L. Lama, D. Cutajar, J. Borg, F. Monaci
MULTIBEAM RADAR TECHNOLOGY APPLIED TO SPACE SURVEILLANCE IN THE LEO REGIME**
- 3. F. Curti, V. Schiattarella, D. Spiller, D. Luchena, C. Facchinetti, L. Ansalone, A. Tuozi
SPACE-BASED DETECTION OF ORBITING OBJECTS BY USING STAR SENSORS**
- 4. M. Acernese, L. Parisi, G. Zarccone, S.H. Hossein, L. Mariani, F. Curianò, F. Santoni, F. Piergentili
THE SAPIENZA SCIENTIFIC OBSERVATORY NETWORK: ACTIVITIES OVERVIEW AND RECENT DEVELOPMENTS**
- 5. P. Marzioli, A. Gianfermo, L. Frezza, D. Amodio, F. Curianò, P. Seitzer, F. Piergentili, F. Santoni
LEDSAT: A LED-BASED CUBESAT FOR CALIBRATION OF OPTICAL SPACE DEBRIS TRACKING AND ATTITUDE RECONSTRUCTION**
- 6. A. Francesconi, C. Giacomuzzo, L. Olivieri, G. Sarego
NUMERICAL ANALYSIS OF FRAGMENTS GENERATED AFTER SPACECRAFT COLLISIONS**
- 7. M. D. Vitolo, M. Maestrini, P. Di Lizia
SAMPLING-BASED STRATEGY FOR ON-ORBIT SATELLITE INSPECTION**
- 8. L. Mariani, L. Parisi, S. Melillo, M. Acernese, S. Hadji Hossein, G. Zarccone, F. Curianò, F. Piergentili, F. Santoni
BI STATIC OPTICAL MEASUREMENTS FOR REENTERING OBJECTS ATTITUDE AND ORBIT DETERMINATION**



SESSION 14

ADVANCED ENERGY STORAGE AND PROPULSION SYSTEMS IN AERONAUTICS

Thursday AM, September 12 2019, 9:30 – 13:00

Chair: Prof. Lorenzo Trainelli, Politecnico di Milano

Room: 11

1. B. Moriconi, Alfio E. Vinci, F. Paganucci

AN ANALYSIS OF THE ENERGY STORAGE SYSTEM FOR E-THRUST TEDP RUNNING ON DIFFERENT FUELS

2. L. Trainelli, Rossi, F. Salucci, C.E.D. Riboldi, A. Rolando

PRELIMINARY SIZING AND ENERGY MANAGEMENT OF SERIAL HYBRID-ELECTRIC AIRPLANES

3. L. Trainelli, D. Comincini, F. Salucci, A. Rolando, C.E.D. Riboldi

SIZING AND PERFORMANCE OF HYDROGEN-DRIVEN AIRPLANES

4. C.E.D. Riboldi, F. Bigoni, F. Salucci, A. Rolando, L. Trainelli

SWITCHING TO ELECTRIC PROPULSION: AERO CLUB FLEET AND INFRASTRUCTURE SIZING

5. D. Ciliberti, F. Orefice, P. Della Vecchia, F. Nicolosi, S. Corcione

A PRELIMINARY SIZING METHOD FOR TURBO-ELECTRIC AIRCRAFT WITH DISTRIBUTED PROPULSION

6. M. Bruglieri, A.M. Marchionni, L. Trainelli

OPTIMIZATION OF THE DEMAND SATISFIED BY A “MICRO-FEEDER” HYBRID-ELECTRIC AIR TRANSPORT SERVICE

7. M.G. De Giorgi, A. Ficarella, A. Suma, E. Pescini, D. Fontanarosa

EXPERIMENTAL CHARACTERIZATION OF A PLASMA ASSISTED LIFTED FLAME

8. A. Swaminathan, V. Malhotra

UPWARD SPREAD FORCED SMOLDERING PHENOMENON: EFFECTS AND APPLICATIONS



SESSION 26

SYMPOSIUM 7

PLANETARY EXPLORATION

Thursday AM, September 12 2019, 9:30 – 13:00

Chair: Prof. Luciano Iess, Sapienza Università di Roma

Room: 8

KEYNOTE

Prof. Luciano Iess, Sapienza Università di Roma
DEEP SPACE NAVIGATION - PRESENT AND FUTURE

1. D. Mortari

THE THEORY OF CONNECTIONS: CURRENT SUMMARY

2. G. Cascioli, A. Genova, L. Iess

IMPROVING THE KNOWLEDGE OF SOLAR SYSTEM DYNAMICS THROUGH A COMBINED ANALYSIS OF PLANETARY MISSIONS

3. A. Olivieri, L. Bruzzone, J. Plaut, F. Bovolo, R. Croci, M. Nati, F. Richichi, Raffaello Paolo Rippo

RADAR SOUNDING: FROM MARS TO JUPITER

4 R. Volpe, M. Sabatini, G.B. Palmerini, D.M. Portela

TESTING AND VALIDATION OF AN IMAGE-BASED, POSE AND SHAPE RECONSTRUCTION ALGORITHM FOR DIDYMOS MISSION

5 L. Pollice, E. Del Vecchio, M. Fiore, A. Lazzaro, F. Petricca, A. Valeriani, P. Gaudenzi

EXPERIENCING A CONCURRENT ENGINEERING ENVIRONMENT FOR THE PRELIMINARY DESIGN OF A MISSION TO TITAN

6. P. Rawat

CHARACTERIZATION AND DETECTION OF EXOPLANETS – SIGNIFICANCE METHODOLOGIES AND DEVELOPMENTS

7. Cataldi, S. Marcuccio

A 2-D TRAJECTORY DESIGN ALGORITHM FOR MULTIPLE ASTEROID FLYBY MISSIONS

8. Virginia Notaro, John W Armstrong, Sami W Asmar, Luciano Iess

THE TIME-DELAY MECHANICAL NOISE CANCELLATION TECHNIQUE



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Thursday PM, September 12 2019

SESSION 37

Symposium 16

THE ITALIAN CONTRIBUTION TO THE ISS RESEARCH AND THE ASI EXPERIMENTS FOR THE MISSION BEYOND

Thursday PM, September 12 2019, 14.00 – 16.00

Chair: Eng. Giovanni Valentini – Eng. Marino Crisconio, Agenzia Spaziale Italiana

Room: 1

Papers on the mission VITA

1. E. Carrubba, M. Balsamo, G. Neri, G. Valentini, M. Crisconio, C. Sollazzo, G. Galoforo, S. Piccirillo, G. Mascetti

ITALIAN SCIENCE ON ISS: THE VITA MISSION

2. M. Maccarrone, A. Gambacurta, M. Fava, Battista, M. Balsamo, Piccirillo, G. Valentini, G. Mascetti, M. Bari

THE SERISM PROJECT OF THE VITA MISSION OF THE ITALIAN SPACE AGENCY: FROM EARTH TO SPACE, STEP BY STEP

3. A. Roda, M. Zangheri, M. Mirasoli, M. Guardigli, F. Di Nardo, L. Anfossi, C. Baggiani, M. Benassai, E. Carrubba, G. Neri, P. Simoni

CHEMILUMINESCENCE BIOSENSOR FOR MONITORING ASTRONAUTS' HEALTH DURING SPACE MISSIONS: RESULTS FROM THE INTERNATIONAL SPACE STATION

4. E.S. Di Filippo, S. Chiappalupi, S. Falone, F. Amicarelli, G. Sorci, S. Fulle
MYOGRAVITY MULTIDISCIPLINARY APPROACH TO THE ANALYSIS OF THE FUNCTIONAL ALTERATIONS INDUCED BY MICROGRAVITY IN HUMAN SATELLITE CELLS, AND STUDY OF POSSIBLE COUNTER MEASURES

5. G. Baiocco, M. Giraudo, L. Bocchini, S. Barbieri, I. Locantore, E. Brussolo, D. Giacosa, L. Meucci, S. Steffenino, A. Ballario, B. Barresi, R. Barresi, M. Benassai, L. Ravagnolo, L. Narici, A. Rizzo, E. Carrubba, F. Carubia, G. Neri, M. Crisconio, S. Piccirillo, G. Valentini, S. Barbero, M. Giacci, C. Lobascio, A. Ottolenghi
THE PERSEO EXPERIENCE: A WATER-FILLED GARMENT PROTOTYPE FOR PERSONAL RADIATION PROTECTION OF ASTRONAUTS SUCCESSFULLY TESTED ON BOARD THE INTERNATIONAL SPACE STATION

6. Lentini, E. Afelli, E. Carrubba, A. Piras, R. Sapone, M. Crisconio, G. Valentini
ARAMIS - AUGMENTED REALITY APPLICATION FOR MAINTENANCE, INVENTORY AND STOWAGE

7. Giovanna Aronne, Luigi Gennaro Izzo, Leone Ermes Romano, Sara De Francesco, Veronica De Micco, Stefania De Pascale, Elisa Carrubba, Germana Galoforo, Sara Piccirillo, Giovanni Valentini
SOLUTIONS TO OVERCOME TECHNICAL CONSTRAINTS AND ACHIEVE SCIENTIFIC GOALS OF THE MULTITROP EXPERIMENT.

SESSION 38

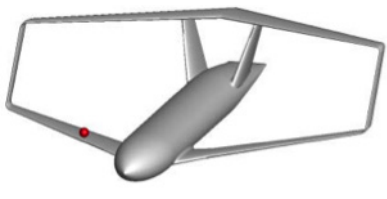
SYMPOSIUM 17

PARSIFAL PROJECT: A DISRUPTIVE AIRCRAFT FOR FUTURE AIR TRANSPORT

Thursday PM, September 12 2019, 14.00-16.00

Chair Prof. Aldo Frediani, Università di Pisa

Room: Cloister



1. A. Frediani, V. Cipolla, K. Abu Salem, V. Binan

PARSIFAL PROJECT: AN OVERVIEW

2. M. Carini, M. Méheut, L. Sanders

**AERODYNAMIC AND ACOUSTIC ANALYSIS OF A PRELIMINARY PRANDTLPLANE CONFIGURATION
WITHIN THE FRAMEWORK OF THE PARSIFAL PROJECT**

3. M. Picchi Scardaoni, M.I. Izzi, E. Panettieri, M. Montemurro

PRANDTLPLANE AIRCRAFT LEAST-WEIGHT DESIGN: A MULTI-SCALE OPTIMISATION STRATEGY

4. C. Varriale, A. Raju Kulkarni, G. La Rocca, M. Voskuij

A HYBRID, CONFIGURATION-AGNOSTIC APPROACH TO AIRCRAFT CONTROL SURFACE SIZING

5. A. Frediani, K. Abu Salem, M. Bianchi, V. Binante, V. Cipolla, G. Palaia

TAKE-OFF ANALYSIS AND SIMULATION FOR A PRANDTLPLANE COMMERCIAL AIRCRAFT

6. R.J.M. Elmendorp, G. La Rocca

COMPARATIVE DESIGN SENSITIVITY STUDIES ON BOX-WING AIRPLANES



SESSION 15

ROTORCRAFTS

Thursday PM, September 12 2019, 14.00-16.00

Chair: Prof. Massimo Gennaretti, Università Roma Tre

Room: 17

1. H. Nabi, G. Quaranta

QUASI-LINEAR PARAMETER VRYING (qLPV) MODELING APPROACH IN REAL TIME PILOTED SIMULATION OF TILTROTOR

2. N. Taymourtash, V. Muscarello, G. Quaranta

INFLOW MODEL IDENTIFICATION FROM WIND TUNNEL TESTS FOR ROTORCRAFT-OBSTACLE INTERACTION

3. V. Muscarello, G. Quaranta

ROBUST ANALYSIS OF BIODYNAMIC INTERACTION IN TILTROTORS

4. A.D. Marano, F. Marulo, M. Guida, T. Polito

UNINA INVOLVEMENT IN THE CS2 JU T-WING PROJECT

5. M. Daniele, A. Zanoni, P. Masarati, G. Quaranta

DEVELOPMENT OF A VIRTUAL REALITY REAL TIMEHELICOPTER FLIGHT SIMULATOR

6. G. Avanzini, V. De Luca

PATH PLANNING OF REMOTELY OPERATED SMALL ELECTRICAL ROTORCRAFT FOR ENVIRONMENTAL MONITORING

7. A. Caiani, G.L. Ghiringhelli, M. Morandini

MULTIBODY TURBOFAN ENGINE MODEL FOR FAN BLADE-OUT EVENT SIMULATION

SESSION 9

AERODYNAMICS AND FLIGHT MECHANICS

Thursday PM, September 12 2019, 14.00-16.00

Chair: Prof. Fulvio Stella, Sapienza Università di Roma

Room: 8

1. M. Ciallella, M. Ricchiuto, R. Paciorri, A. Bonfiglioli

SHIFTED SHOCK-FITTING: A NEW PARADIGM TO HANDLE SHOCK WAVES FOR EULER EQUATIONS

2. A. Esposito, F. De Rosa, L. Notarnicola

DEVELOPMENT OF LOW-COST FULLSCALE ICING WIND TUNNEL

3. D. De Marinis, F. Bonelli, G. Pascazio

AN IMMERSED BOUNDARY APPROACH FOR HYPERSONIC FLOWS

4. J. Serafini, C. Pasquali, G. Bernardini, M. Gennaretti

DYNAMIC INFLOW MODELING IN GROUND EFFECT FROM VORTEX-LATTICE AERODYNAMIC SIMULATIONS

5. S. Corcione, V. Cusati, F. Nicolosi, D. Ciliberti

DIRECTIONAL STABILITY ISSUES OF A THREE LIFTING SURFACES AIRCRAFT

6. Krishna Thakkar, Anubhav Bhargava, Akanksha Kesarwani, Vinayak Malhotra

MODULATED REVERSE THRUST FOR EFFECTIVE SUBSONIC OPERATION

7. S. Pinto, P. Bettini, M. Boffadossi, A. Gurioli

DEVELOPMENT AND TESTING OF OPTICAL FIBER BASED MONITORING SYSTEMS FOR A WIND TUNNEL APPLICATION

SESSION 16

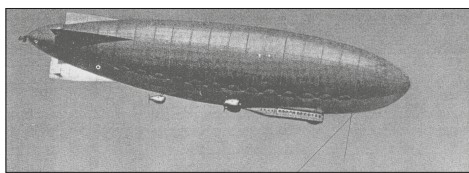
SPECIAL SESSION

HISTORICAL EVOLUTION OF AEROSPACE SCIENCES

Thursday PM, September 12 2019, 16.00-18.00

Chair: Prof. Cesare Cardani, Politecnico di Milano; Lt. Gen. Basilio Di Martino, Aeronautica Militare

Room: Cloister



1. B. Di Martino

A LOST CHANCE: THE HIGH DIRECTORATE FOR STUDIES AND TESTS (1927-1943)

2. L. Borzise, M. G. Bella

UMBERTO NOBILE NELLE CARTE DELL'ARCHIVIO STORICO DELL'A.M.

3. G. Alegy

PRESERVING AIRCRAFT TO TEACH THE FUTURE -THE ROLE OF SURVIVAL OF THE ACADEMIA IN THE ITALIAN AVIATION HERITAGE

4. M. Longoni

A COMPRENSIVE APPROACH TO THE PRESERVATION AND PROMOTION OF ITALIAN AERONAUTICAL TECHNOLOGIES

5. M. Marchetti

THE NATIONAL A.I.D.A.A. CONGRESSES: HISTORICAL AND SCIENTIFIC EVOLUTION

