8th European Space Cryogenics Workshop 2023 – Final Programme

Day 1 – 5th June 2023

Location: ESA ESTEC - Newton 2

11h30-11h45: *Opening Talk (O. Pin).*

11h45-13h00: ***Session 1: Future Needs for Space Cryogenics (chairpersons: Stephane Lapensee)***

1.1 ESA Cryogenics and Focal Plane Cooling Roadmap Preparation for 2024-2029 (ESA – M. Branco)

1.2 Future Needs for Cryogenics in Science at ESA (ESA – M. Linder)

1.3 Future Needs for Cryogenics in Earth Observation at ESA (ESA – A. Malavart)

1.4 The ARIEL Spacecraft – Cryogenics Aspects (ESA – T. Tirolien)

13h00-14h00: *Lunch Break*

14h00-15h25: ***Session 2: Pulse Tube Coolers (part 1) (chairpersons: Thierry Tirolien and Manfred Falkner)***

2.1 MTG Pulse Tube Coolers: Summary of tests and initial flight behaviour (Thales Alenia Spazio – B. Collaudin)

2.2 Air Liquide LPTC Family for the MTG Mission (Air Liquide – P.-O Mine)

2.3 Design and testing of a low-noise high-frequency miniature pulse-tube cooler (Thales Cryogenics BV – R. Arts /Absolut System – T. Hurot)

2.4 COTS Coolers for space applications (Thales Cryogenics BV – G. de Jonge)

15h25-15h40: *Coffee Break*

15h40-17h15: **Session 3: Sub-Kelvin Coolers *(chairpersons: Martin Linder)***

3.1 A 15K to sub-100 mK continuous cooler for space (MSSL – J. Bartlett)

3.2 Multi-Stage ADR for space Sub-Kelvin cooling (CEA – J.-M Duval)

3.3 Development of a new sub-K cooler for future space missions (IAS – V. Sauvage; C. de Jabrun)

3.4 3He:4He Phase separator for the Closed Cycle Dilution Refrigerator (CEA – S. Martin)

17h15: *Welcome Drink*

Day 2 – 6th June 2023 - Morning

Location: ESA-ESTEC - Newton 2

09h00-10h00: ***Session 4: Pulse-Tube Coolers (part 2) (chairpersons: Roel Arts)***

4.1 Air Liquide HiPTC 10K-40K Cooler Test Results and Perspectives (Air Liquide - P.-O Mine)

4.2 Air Liquide Pulse Tube Cryocooler Compressor Development (DEMO 0) and Test Results (Air Liquide - P.-O Mine)

4.4 Low Temperature Pulse Tube Cooler using asymmetric double inlet valve for passive phase shift (CEA – P. Hilliere)

10h00-11h25: ***Session 5: Vibration-Free Cooling (chairpersons: Pierre Henriot)***

5.1 Optical Cryocooler Development (Air Liquide – A. Gardelein)

5.2 Vibration-Free 40-80K Turbo-Brayton Cryo-cooler (Absolut System – M. Dalban-Canassy)

5.3 Development of a very high efficiency and compact heat exchanger for a Reverse Turbo-Brayton Crycooler (Absolut System – A. Ungureanu)

5.4 Zero Vibration Cryocooling (Demcon – P. Lerou)

11h25-11h40: *Coffee Break*

11h40-13h00: **Session 6: Cryogenics for Science (part 1)** ***(chairpersons: Martin Crook)***

6.1 Science behind ATHENA (ESA – M. Guainazzi)

6.2 Cryogenics Aspects of ATHENA Reformulation (ESA – M. Branco)

6.3 EUCLID Payload Module Passive Cooling (Airbus Defence & Space – D. Filleul)

6.4 Cryostat SVOL: Cryogenic Platform dedicated to Space applications (CNES – J. Andre)

13h00-14h00: *Lunch Break*

Day 2 – 6th June 2023 - Afternoon

Location: ESA-ESTEC - Newton 2

14h00-15h00: ***Session 7: Pulse Tube Coolers (part 3) (chairpersons: Moritz Branco)***

7.1 2-Stage Pulse Tube Cooler – ongoing activities (Thales Cryogenics – R. Arts)

7.2 Development of an Elegant Breadboard Model of the Next-Generation Space Compressors at Thales Cryogenics (Thales Cryogenics – H. Schot)

7.3 LPT6510 Flight Qualification Status (Thales Cryogenics – R. Arts)

15h00-16h00: **Session 8: Cryogenics for Earth Observation (chairpersons: *Alizee Malavart)***

8.1 The development of CRYASSY, a compact, cost-effective cryogenic assembly for infrared instruments (Absolut System – T. Hurot)

8.2 METImage and IASI-NG cryogenic sub-system performance validation (Airbus Defence & Space – S. Iugovich; G.Jahn)

8.3 TRISHNA: Development and performances of a cost-effective cryogenic sub-system (Airbus Defence & Space – S. Le Foll)

16h00-16h15: *Coffee Break*

16h15-17h40: **Session 9: Cryostats and Integration Solutions (part 1) *(chairpersons: Jerome Andre)***

9.1 Development and Test of Flexible High-Temperature Superconducting Current Lead Harness for Satellites (NeutronStar Systems – M. Collier-Wright)

9.2 High Efficiency Operation of a 4K-Gifford-McMahon Cryocooler without rotary valve with a metal bellows compressor (Pressure Wave Systems – J. Hoehne)

9.3 Simulations of a Pulse Tube with a Gas Loop Heat Switch (Air Liquide – D. Lopes)

9.4 Harness Thermal Anchoring in Cryogenic applications and verification test + Use of a passive thermal switch to reduce cool-down times for a ground cryostat (INTA L. Bastide; Josefina Torres)

18h00-21h00: *Dinner at MAMA (Noordwijkerhout)*

Day 3 – 7th June 2023 - Morning

Location: ESA-ESTEC - Newton 2

09h00-10h25: ***Session 10: Joule-Thomson Coolers (chairpersons: Marcel Ter Brake and Thomas Prouve)***

10.1 Technology Demonstration of a Neon JT Cooler System for Ariel (RAL STFC – M. Crook)

10.2 JT Cooler Compresor Tailoring to Suit a Wide Variety of Applications (RAL STFC – M. Crook)

10.3 Joule-Thomson Vapour Cooling for Future Space Applications (RAL STFC – M. Hills)

10.4 Development of a Hydrogen Electrochemical Compressor for Joule-Thomson Cryocooler (LEMTA CNRS – G. Sdanghi)

10h25-10h40: *Coffee Break*

10h40-12h00: ***Session 11: Cryostats and Integration Solutions (part 2) (chairpersons: Bernard Collaudin and Sebastien Le Foll)***

11.1 Overview of Absolut system Thermal Link Assemblies developed for Earth Observation instruments (Absolut System – A. Bouakka-Manesse)

11.2 Dissipation induced by micro-vibrations in low temperature gas-gap heat switches (CEA – T. Adam)

11.3 The versatile Role of an APU for Ariane 6 and Hydrogen Aircraft (TU Berlin - H. Lowhim)

11.4 Mechanical characterization at 4.2 K of flexible pivots made by metal additive manufacturing (CSL - E. Lallemand)

11.5 Use of a passive thermal switch to reduce cool-down times for a ground cryostat (INTA – L. Bastide)

12h15-13h15: *Lunch Break*

Day 3 – 7th June 2023 - Afternoon

13h15-14h40: ***Session 12: Cryogenics for Science (part 2) (chairpersons: Gerd Jahn)***

12.1 The LiteBIRD Cryogenic System (CEA – T. Prouve)

12.2 The ATHENA/X-IFU 2K Core Thermal Mathematical Model (CNES – L. Marelli)

12.3 The payload of the Lunar Gravitational-wave Antenna (UCLouvain – J. v Heijningen)

12.4 Sorption-based Joule-Thomson Cooler for Lunar Gravitational Wave Antenna (TU Twente – H.J.M. ter Brake)

14h40-14h45: *Final Word (M. Branco)*