



Mercury 2022

Current and future science of the innermost planet

Orléans, France, 7-10 June 2022

CONFERENCE BOOKLET

Conference website : <https://mercury2020.ias.u-psud.fr/>

CONFERENCE PROGRAM

Program at a glance

Tuesday June 7		Wednesday June 8		Thursday June 9		Friday June 10	
8:30	Opening						
9:00	Welcome	9:00	Imber (invited)	9:00	Robidel	9:00	Denevi (invited)
9:20	Benkhoff (invited)	9:30	Lavorenti	9:20	Millilo	9:30	Lark
9:50	André	9:50	Glass	9:40	Mangano	9:50	Namur
10:10	Zender	10:10	Schmid	10:00	Will (invited)	10:10	Saito
10:30	Coffee break (posters)	10:30	Coffee break (posters)	10:30	Coffee break (posters)	10:30	Coffee break (posters)
11:15	Murakami G. (invited)	11:15	Caminiti	11:15	Chabot	11:15	Orsini
		11:35	Jozwiak	11:35	Bertoli	11:35	Koutroumpa
11:45	Griton	11:55	Man	11:55	Filacchione	11:55	Aizawa
12:05	Pump	12:15	Conway	12:15	Wohlfarth	12:15	Mura
12:25	Livi						
12:45	Lunch break	12:35	Lunch Break	12:35	Lunch Break	12:35	Lunch Break
14:15	Rothery (invited)	14:15	Iess (invited)	14:00	FREE (tours : Sully - Nançay)	14:15	Deutsch
14:45	Gallano	14:45	Di Stefano			14:35	Bott
15:05	Hirata	15:05	Fraenz			14:55	Schmidt
15:25	Barraud	15:25	Tenthoff			15:15	Moroni
						15:35	Karlsson
15:45	Coffee break (posters)	15:45	Coffee break (posters)				
16:30	Van Hoolst (invited)	16:30	Wright			16:00	END OF CONFERENCE
17:00	Cappuccio	16:50	Hyodo				
17:20	Charlier	17:10	Blance				
17:40	Head	17:30	Hood				
18:00	End of the day	17:50	End of the day	18:00	End of the tour		
			PUBLIC OUTREACH EVENT MUSEUM OF FINE ARTS		CONFERENCE COCKTAIL MUSEUM OF NATURAL HISTORY		

- Theme 1 : Exosphere and magnetosphere dynamics
- Theme 2 : Surface geology and composition
- Theme 3 : Deep interior and planetary evolution
- Theme 4 : Fundamental physics
- Theme 5 : Miscellaneous



TUESDAY JUNE 7, 2022

8:30 : Opening

9:00-9:20 : Welcome

(Conveners : Delcourt D., Leblanc F.)

Theme 5 : Miscellaneous

9:20-9:50 : Benkhoff J. (invited) : “BepiColombo - comprehensive exploration of Mercury: first results and mission status”

9:50-10:10 : André N. : “Overview of low-energy electron observations from the Mercury Electron Analyzers onboard Mio/BepiColombo during cruise phase and planetary flybys”

10:10-10:30 : Zender J. : “BepiColombo Mercury Swing-by-2 on 23 June 2022 - An Overview”

10:30-11:15 : coffee break (poster setup)

11:15-11:45 : Murakami G. (invited) : “Updated status and results of BepiColombo/Mio during interplanetary cruise phase”

Theme 1 : Exosphere and magnetosphere dynamics

11:45-12:05 : Griton L. : “Global 3D numerical simulations of the magnetosphere of Mercury in a dynamic solar wind”

12:05-12:25 : Pump K. : “Revised Modular Model of Mercury’s Magnetospheric Magnetic Field”

12:25-12:45 : Livi S. : “Strofio Status and Measurements Outlook”

12:45-14:15 : lunch break



(Conveners : Chabot, N., Denevi B.)

Theme 2 : Surface geology and composition

14:15-14:45 : Rothery D. (invited) : "BepiColombo surface science objectives"

14:45-15:05 : Galiano A. : "Principal Component Analysis and Spectral Angle Mapper on MASCS/MESSENGER data for the spectral characterization of Mercury surface"

15:05-15:25 : Hirata K. : "Comparison of magma eruption fluxes in the Rembrandt and Caloris interior plains: implications for the north-south smooth plains asymmetry"

15:25-15:45 : Barraud O. : "The lack of hollows in the Mercury's high-reflectance red plains"

15:45-16:30 : coffee break (poster viewing)

Theme 3 : Deep interior geophysics and planetary evolution

16:30-17:00 : Van Hoolst T. (invited) : "Mercury's deep interior"

17:00-17:20 : Cappuccio P. : "Mercury gravity field and rotational state with the BepiColombo MORE experiment"

17:20-17:40 : Charlier B. : "A consistent model for the chemical, mineralogical, and physical characteristics of Mercury's crust"

17:40-18:00 : Head J. : "Mercury Magmatic, Tectonic and Geodynamic History: A Comparative Planetology Analysis"



WEDNESDAY JUNE 8, 2022

(Conveners : Murakami G., Langevin Y.)

Theme 1 : Exosphere and magnetosphere dynamics

9:00-9:30 : Imber S. (invited) : "Mercury's Magnetospheric Dynamics"

9:30-9:50 : Lavorenti F. : "Electron dynamics at Mercury: acceleration, circulation and precipitation processes using a global fully-kinetic model"

9:50-10:10 : Glass A. : "Mercury's Plasma Sheet Horn from MESSENGER Data"

10:10-10:30 : Schmid D. : "Magnetic evidence for an extended hydrogen exosphere at Mercury"

10:30-11:15 : coffee break (poster viewing)

Theme 2 : Surface geology and composition

11:15-11:35 : Caminiti E. : "Evolution of Mercury's crust: A common process for the formation of smooth plains associated with impact basins"

11:35-11:55 : Jozwiak L. : "Understanding the Age and Distribution of Explosive Volcanism on Mercury: Insights from Pyroclastic Deposits"

11:55-12:15 : Man B. : "Newly discovered widespread extensional grabens on Mercury's compressional structures"

12:15-12:35 : Conway S. : "Landforms caused by downslope mass wasting on Mercury"

12:35-14:15 : lunch break



(Conveners : Zender J., Vincendon M.)

Theme 4 : Fundamental physics with Bepi-Colombo

14:15-14:45 : Iess L. (invited) : “Tests of relativistic gravity with the MORE investigation on BepiColombo”

14:45-15:05 : Di Stefano I. : "The MORE fundamental physics test at Mercury"

15:05-15:25 : Fraenz M. : "Effects of spacecraft outgassing and potential at Mercury"

Theme 2 : Surface geology and composition

15:25-15:45 : Tenthoff M. : “Accurate 3D Reconstruction of Mercury with Shape from Shading"

15:45-16:30 : coffee break (poster viewing)

16:30-16:50 : Wright J. : “Georeferenced M-CAM images from Bepi-Colombo’s first Mercury swingby"

16:50-17:10 : Hyodo R. : “Late accretion onto Mercury"

17:10-17:30 : Blance A.: “Prevalence and Significance of Ejecta Flows on Mercury: A Global Survey"

17:30-17:50 : Hood L. : “Magnetic Anomalies Aligned Radial to the Caloris Impact Basin: Further Evidence for Ejecta Deposit Sources"

19:00-20:30 : Public outreach event at Orléans Museum of Fine Arts



THURSDAY JUNE 9, 2022

(Conveners : Henri P., Millilo A.)

Theme 1 : Exosphere and magnetosphere dynamics

9:00-9:20 : Robidel R. : "Observations of Mercury's Exosphere during BepiColombo First Mercury Flyby with PHEBUS' visible channels"

9:20-9:40 : Milillo A. : "BepiColombo First Mercury Fly-by: first taste of the mission results on investigation of the environment around the planet"

9:40-10:00 : Mangano V. : "Coordinated campaign of ground-based observations of Mercury's exosphere in 2021"

Theme 4 : Fundamental physics with Bepi-Colombo

10:00-10:30 : Will C. (invited) : "Zombie alert! Solar system tests of GR are still alive"

10:30-11:15 : coffee break (poster viewing)

Theme 2 : Surface geology and composition

11:15-11:35 : Chabot N. : "Topography, Illumination, and Thermal Models of Mercury's Polar Deposits"

11:35-11:55 : Bertoli S. : "Landform analysis and age determination of craters in the North pole regions of Mercury"

11:55-12:15 : Filacchione G. : "Spectral detection of ices in Mercury's PSRs by SIMBIOSYS-VIHI on BepiColombo mission"

12:15-12:35 : Wohlfarth K. : "A Mystery solved: Wavelength-dependent Seeing changes the normalized spectral slope of Mercury"

12:35-14:00 : lunch break



14:00-18:00 : FREE (tours: Sully Castle or Radio-Telescope of Nançay)

19:00-20:30 : Conference cocktail at Museum of natural History

FRIDAY JUNE 10, 2022

(Conveners : Benkhoff J., Terada N.)

Theme 3 : Deep interior geophysics and planetary evolution

9:00-9:30 : Denevi B. (invited) : "The Evolution of Mercury's Crust"

9:30-9:50 : Lark L : "Mercury: Thermal evolution of a layered system"

9:50-10:10 : Namur O. : "Carbon partitioning under reducing conditions: implications for Mercury"

Theme 1 : Exosphere and magnetosphere dynamics

10:10-10:30 : Saito Y. : "Venus and Mercury fly-by observation by MPPE-MIA on BepiClombo/Mio"

10:30-11:15 : coffee break (poster viewing)

11:15-11:35 : Orsini S. : "Remote sensing of Mercury sodium emission and relationships with magnetospheric activity"

11:35-11:55 : Koutroumpa D. : "PHEBUS observations of the He 58.4 nm emission during BepiColombo's first Mercury Flyby"

11:55-12:15 : Aizawa S. : "The first simultaneous observation of low energy ions and electrons at Mercury during the first BepiColombo flyby"

12:15-12:35 : Mura A. : "Yearly variability of Mercury's exosphere: com-



parison of the Na and Ca cases"

12:35-14:15 : lunch break

(Conveners : Delcourt D., Leblanc F.)

Theme 2 : Surface geology and composition

14:15-14:35 : Deutsch A. : "Investigating 1064-nm Albedo along Mercury's Hot and Cold Poles"

14:35-14:55 : Bott N. : "Simulating micrometeoroid bombardment of Mercury analog samples"

Theme 1 : Exosphere and magnetosphere dynamics

14:55-15:15 : Schmidt C. : "Impact Events Observed by MESSENGER UVVS"

15:15-15:35 : Moroni M. : "Micro-meteoroids impact vaporization (MMIV) as source for Ca and CaO exosphere along Mercury's orbit"

15:35-15:55 : Karlsson T. : "MESSENGER observations of short, large-amplitude structures (SLAMS) in the Mercury foreshock"

16:00 : end of conference



POSTER LIST

Please refer to the number below for the hanging of your poster

- 1 **Aizawa** Escape and precipitation of planetary ions at Mercury under different solar wind conditions
- 2 **André** SPIS simulation of Bepi Colombo interaction with the plasma environment encountered during the Venusian and Hermean flybys: influence on plasma measurements
- 3 **Barraud** The BepiColombo Surface and Environment Interactions Studies Group (SEIS)
- 4 **Bentley** BepiColombo science data in the Planetary Science Archive - current status and future plans
- 5 **Besse** Updating the Mercury Mean Spectra using 4.7 millions MASCS Spectra
- 6 **Cartier** A large proto-Mercury as the aubrite parent body
- 7 **Chaufray** EUV reflectance of Mercury measured by Bepi-Colombo/PHEBUS
- 8 **Cornet** Exploring the MASCS data set through the MeSS database
- 9 **Deborde** Investigating the effect of surface - exosphere interactions
- 10 **Doressoundiram** A spectral study of the Caloris basin and its smooth plains' relationship



- 11 **Futaana** Energetic Neutral Atom imaging at Mercury: Science objectives and the initial operation of the MPPE/ENA instrument on Mio
- 12 **Giroud-Proeschel** Investigation of Hollow Locations in Craters of Different Degradation Classes
- 13 **Glantzberg** Investigating the Distribution of Surface Ice in Mercury's Northernmost Craters
- 14 **Hadid** Evidence of planetary Oxygen and Carbon ions in the outer flank of Venus magnetosheath
- 15 **Ho** Suprathermal Electrons in Mercury's Magnetosphere
- 16 **Kreslavsky** Ponded Melt Deposits Antipodal to Large Young Impact Craters on Mercury
- 17 **Leblanc** Modelling Mercury's exospheric sodium seasonal variability
- 18 **Lennox** Lobate Ejecta Deposits at Mercury's South Pole (H15)
- 19 **Mckee** Investigating the Incidence Angle Effect on X-ray Fluorescence with the MIXS Ground Reference Facility
- 20 **Milillo** MERCURY IMPACTOR: A mission to study below the surface
- 21 **Morrissey** Quantifying Mineral and Position Specific Surface Binding Energies for Multiscale Modelling of Solar Wind Sputtering on Mercury



- 22 Morlok** Mid-Infrared Reflectance Studies of Mercury Surface Regolith Analogs
- 23 Munaretto** Photometric modelling of Mercury surface features from multiangular MESSENGER/MDIS observations
- 24 Muñoz** The MeSS (Mercury Surface Spectroscopy) Database Architecture and Contents
- 25 Persson** The scenic tour of the Venusian magnetosheath by BepiColombo
- 26 Prado** Some useful orbits around Mercury for scientific missions
- 27 Sahraoui** Characterizing plasma turbulence in the Hermean environment (and beyond)
- 28 Sanchez-Cano** Space Weather monitoring with BepiColombo
- 29 Schriver** Space Weathering of Icy Volatiles within North Polar Permanently Shadowed Regions
- 30 Stenzel** Handling Cauchy Noise in Laser Altimetry of Mercury-Tests with MESSENGER Data and Prospects for BepiColombo/BELA
- 31 Szczech** Expected characterization of Mercury's surface from global to local scales by the BepiColombo Laser Altimeter (BELA)



- 32 Szczech** Mercury's basin inventory and analysis of topography and gravity field data
- 33 Terada** Collisional acceleration of Mercury's sodium exosphere in MMIV-produced clouds
- 34 Tognon** Targets definition for BepiColombo in eastern H9 Eminescu quadrangle
- 35 Tosi** Influence of insolation on Mercury's crustal thickness evolution
- 36 Volwerk** Mirror Modes in the Hermean Magnetosheath
- 37 Werner** Modeling the impact of a strong X-class solar flare on the planetary ion composition in Mercury's magnetosphere
- 38 Wohlfarth** Mercury is hot: A fractal thermal roughness Model for MERTIS spectral calibration
- 39 Wright** Combining spectral and morphostratigraphic units on Mercury: A case study of the Rachmaninoff basin area
- 40 Zambon** Spectral analysis of features of interest on Mercury northern hemisphere
- 41 Zomerdijk-Russell** Mercury's Magnetopause as a Tool for Understanding the Planet's Interior

