SCIENCE ORGANIZING COMMITTEE
Patrick Pinet IRAP, Toulouse University, France (Chair)
Mahesh Anand Open University, UK (Co-Chair)
James Carpenter
Ana Cernok
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Kristina Gibbs
Harry Hiesinger
Greg Schmidt
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LOCAL ORGANIZING COMMITTEE
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Marie-Ange Albouy
Gaël David
Yves Daydou
Dolorès Granat
Jérémie Lasue

Updated: 2 May 2018

European Lunar Symposium
Toulouse 2018

Meeting information

Welcome to Toulouse at the Sixth European Lunar Symposium (ELS)! We are hoping to have a great meeting, demonstrating the diversity of the current lunar research in Europe and elsewhere, and continuing to provide a platform to the European lunar researchers for networking as well as exchanging news ideas and latest results in the field of lunar exploration.

We acknowledge the support of Toulouse University and NASA SSERVI (Solar System Exploration Research Virtual Institute). Our special thanks to our SSERVI colleagues, Kristina Gibbs, Jennifer Baer, Ashcon Nejad and to Dolorès Granat at IRAP (Institut de Recherche en Astrophysique et Planétologie)/ OMP (Observatoire Midi-Pyrénées) for their contribution to the meeting preparation and program implementation.

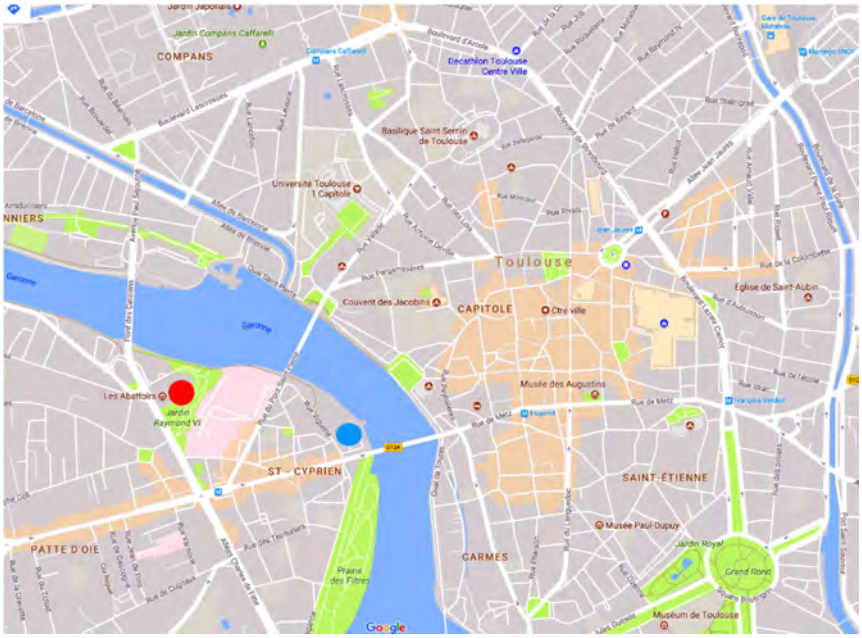
Members of the Science Organizing Committee are thanked for their input in putting together an exciting program and for volunteering to chair various sessions in this meeting. Our special thanks for Ana Cernok and Alice Stephant from the Open University for putting together the abstract booklet.

MEETING VENUE

The ELS will take place at the museum of modern and contemporary art, called “Les Abattoirs”. It is located in the center of Toulouse, close to the “Garonne” river. The street address is 76 Allées Charles de Fitte, 31300 Toulouse. After entering the building through the main entrance, you will immediately find the registration/help desk on the ground floor. The meeting room, called “Auditorium” is in the basement of the building. The room seats 200 people and is equipped with a beamer (HDMI, VGA). There is also a second room called “La Salle du Conseil” (25 seats) available for break-out meetings upon request. This second room is also equipped with a beamer. Oral sessions will be held in the “Auditorium”; the posters will be located in the Hall of the museum, which is next to the “Auditorium”.

Les Abattoirs from the street

L’Auditorium



https://www.google.fr/maps/place/Les+Abattoirs/@43.60075,1.4270853,17z/
https://www.google.fr/maps/place/H%C3%B4tel-Dieu+Saint-Jacques/@43.5995584,1.435377,18z

The meeting venue is shown with the red circle on the map above. The place for the conference dinner on Tuesday evening, at the "Hotel-Dieu Saint-Jacques" is shown with the blue circle. It is within a walking distance on the order of half a mile from the museum. Central station (Gare Matabiau) is to the upper right.

TRANSPORTATION
Métro **:** Line A - station "Saint-Cyprien République"
Bus **:** line 31, bus-stop "les Abattoirs"
Bicycles rent: « Vélo Toulouse »**,** 2 stations are very close to the museum.

REGISTRATION
All participants should register and collect their name badges and conference material at the registration/help desk (located in the main hall of the museum) on Sunday 13th May evening (6:00 – 8:00 pm) or on Monday 14th or Tuesday 15th May (preferably between 8:15 am and 8:45 am).

MEALS
We will provide coffee, tea, water, juice, and cookies during 'coffee breaks' in the hall of the museum Lunch, where provided, will be served next door to the museum in a place called "L'Hémicycle".

PRESENTATIONS
All oral presentations will take place in the museum "Les Abattoirs" in the Auditorium. Posters will be presented in the Hall of the museum and next to the Auditorium. Those presenting talks are encouraged to upload their presentation on the designated computers in the Auditorium as early as possible to ease the organization and to avoid any delays in the schedule. Those presenting on Monday morning, please come to the "Auditorium" no later than 8:20 am. Those presenting in the afternoon session, please upload your presentation during lunch break at the latest. Those presenting on Tuesday, please upload your presentation on Monday. Those presenting on Wednesday, please upload your presentation on Tuesday. At the very latest, all presenters should have uploaded their presentations during the preceding refreshment/lunch break prior to their session.
Presentations should be provided both in Microsoft PowerPoint **and** PDF formats. Any delay caused by technical problems will be taken out from your presentation time.

Each speaker will have a 15 minute slot allocated in the timetable. A maximum of 12 min will be allocated to the actual presentation, with 3 min for Q&A/changeover. The posters will be on display in the foyer area (Hall of the museum) for the entire time of the meeting.

Posters can be put up for display from Monday, 8:00 am until Wednesday, 5:00 pm. We encourage presenters to put up their posters as early as possible to guarantee maximum visibility. Posters can be a maximum size of 119 x 84 cm (format A0) in a portrait mode. Mounting material will be available at the registration/help desk. Any uncollected poster will be disposed at the end of the meeting.

WIFI ACCESS

The meeting hall is equipped with Wifi access. However due to the number of participants, the speed of internet connection may be limited.

SOCIAL EVENT

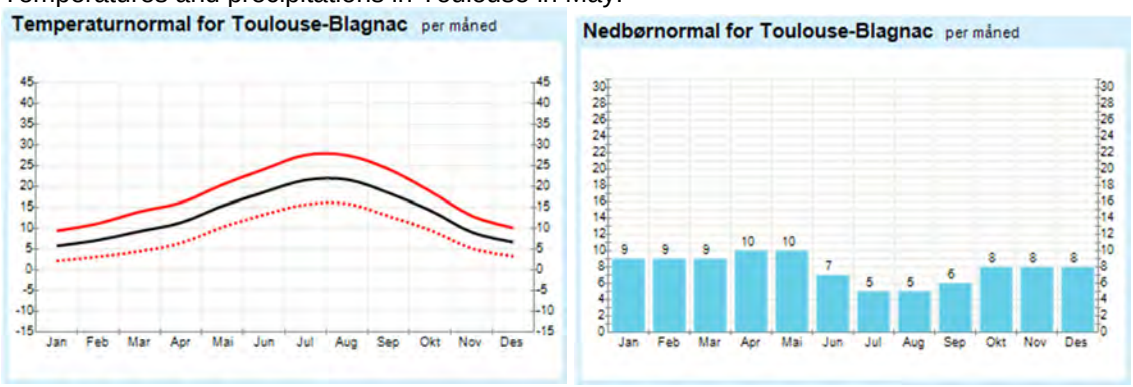
On Tuesday evening (6:15-6.30 pm) we will leave the museum for a short (1 km; 0.6 mile) cultural stroll by the Garonne river to the Hotel-Dieu Saint-Jacques, an historical monument, where the conference dinner will take place. At 7:30 pm refreshments will be served within the building in the “Salle des Pèlerins” (Pilgrims Room) and the dinner will commence at 8:00 pm in the “Salle des Colonnes” (Columns Room).

The Hotel-Dieu is located close to the “Pont Neuf” on the left bank of the Garonne River. The address is 2 Rue Charles Viguerie, 31059 Toulouse. A map will be provided during the meeting.

WEATHER

« À la Saint-Honoré, s'il fait gelée, le vin diminue de moitié. » « At Saint-Honoré (May 16th) if it is freezing, wine production is divided by two”

Temperatures and precipitations in Toulouse in May.



Left: Max temperature: Average max daily (24h) temperature per month
Minimum temperature: Average minimum daily (24h) temperature per month
Right: average amount of days (24h) with precipitation during a month. When precipitation has surpassed 1mm per day (24h) it is defined as a day with precipitation.
See also:
https://weatherspark.com/m/46070/5/Average-Weather-in-May-in-Toulouse-France
http://www.toulouse.climatemps.com/may.php

SIGHTSEEING

Toulouse is the fourth largest city in France with a population of 476 500 (2015) and growing 6000 per year; 1 330 950 habitants within the urban era. **Toulouse** is the capital of Haute-Garonne *département*, Occitanie *région*, southern France. It is situated in a plain where the Garonne River curves northwest from the Pyrenean foothills. The city’s architecture was long characterized by rose-red brick. Founded in ancient times, Toulouse developed as Tolosa during the Roman period. As capital of the Visigoths (419–507) it was taken (508) by Clovis I and included in the Merovingian kingdom. The university was founded in 1229. Its Parlement, established in 1420, had jurisdiction over Languedoc province until the French Revolution. The “Canal du Midi” connecting Toulouse to the Mediterranean, was completed in the 17th century. It was designated a UNESCO World Heritage site in 1996. The aerospace industry has seen extraordinary development in aeronautics and space industry: research.

Updated: 2 May 2018

Program for ELS 2018,
the Sixth European Lunar Symposium

http://els2018.arc.nasa.gov/

Venue
Les Abattoirs
76 Allées Charles de Fitte
31300 Toulouse, France

Science Organizing Committee

Patrick Pinet - IRAP, Toulouse University, France (Chair)
Mahesh Anand - Open University, UK (Co-Chair)
James Carpenter – European Space Agency, NL
Ana Cernok – Open University, UK
Serge Chevrel - IRAP, Toulouse University, France
Doris Daou – NASA Headquarters, USA
Kristina Gibbs, SSERVI, NASA Ames, USA
Harry Hiesinger – WWU, Germany
Simone Pirrotta – ASI, Italy
Greg Schmidt - SSERVI, USA
Alice Stephant - Open University, UK
Wim van Westrenen - VU Univ. Amsterdam, NL

Sunday 13th May 2018	
ELS 2018 - Registration and Reception	
18:00 - 19:30	Registration
18:30 – 20:00	Reception

Monday 14th May 2018				
08:15	Registration			
08:45	Welcome Address (Patrick Pinet) + Opening Remarks (Greg Schmidt)			
All talks: 15 mins (including Q&A)				
Exploration and Future Missions **Chair: Anand**				
SN	***Time***	**Abstract #**	**Author**	**Title**
1	*09:00*	085	Bussey	NASA'S Human Exploration and Operations Mission Directorate's Lunar Activities
2	*09:15*	042	Carpenter	Lunar Exploration Plans in ESA
3	*09:30*	069	Ohtake	Planning a Japanese Lunar Polar Mission
4	*09:45*	046	Kring	A Lunar Sample Return Strategy for the Schrodinger Basin that Taps into the Volatile Cycle of the Lunar Farside
5	*10:00*	094	Futaana	Key Sciences of the Lunar Space Environment to be Investigated by the Mission SELMA
6	*10:15*	018	Porcelli	MoonLIGHT and INRRI for Next Lunar Missions: the Return of Laser Retroreflectors to the Moon
7	*10:30*	128	Barber	L-DART: Direct Analysis of Resources Traps within Lunar Permanently Shadowed Regions by a Penetrator Mission
10:45 – 11:05 Tea/coffee break				
Remote Sensing and Geological Implications **Chair: Hiesinger**				
8	*11:05*	104	Meyer	Observations from a New Global Map of Light Plains from the Lunar Reconnaissance Orbiter Camera
9	*11:20*	032	Wohler	M^3-based Abundance Maps of Lunar Refractory Elements
10	*11:35*	041	Moriarty	The Four Compositional Zones of the South Pole - Aitken Basin Revealed by Moon Mineralogy Mapper Data
11	*11:50*	052	Martinot	Survey of the Lunar Crust-Mantle Interface with the Moon Mineralogy Mapper Data
12	*12:05*	087	Pinet	Mineralogical Mapping at Copernicus Crater from MGM Deconvolution of M3 Observations
13	*12:20*	134	McBride	Diversity of Volcanic Eruption Styles in the Central Procellarum Region of the Moon
14	*12:35*	137	Horgan	Constraints on Lunar Eruption Styles from the Mineralogy of Small Lunar Pyroclastic Deposits
13:00 – 14:00 Lunch (provided onsite)				

Volatiles, Dust and Lunar Environment **Chair: Schmidt**				
15	*14:00*	038	Costello	A Model for the Comparative Role of Impact Gardening as a Control of Near-Surface Ice on the Moon and Mercury
16	*14:15*	047	Horanyi	The Dust Environment of the Moon
17	*14:30*	101	Sefton-Nash	Far-IR Emissivity Temperature Dependence In Lunar South Polar Permanently Shaded Terrain
18	*14:45*	141	Meslin	Radon and Polonium as Tracers of Lunar Outgassing, Volatiles and Dust
19	*15:00*	086	Biswas	Mobile In-Situ Exploration of Lunar Volatiles with the LVS on LUVMI
20	*15:15*	065	O'Brien	Risks and Rewards Amidst Inescapable Fine Dust on the Moon: Measurements from APOLLO 11 to CHANG'E-3 & -4
15:30 – 15:55 Tea/coffee break				
Lunar Interior: Structure, differentiation and Evolution of the Moon **Chair: Stephant**				
21	*15:55*	023	Laneuville	Supercooling and High Magnetic Field on the Early Moon
22	*16:10*	074	Schwinger	Compositional Changes in the Lunar Mantle Resulting from Giant Impact - Induced Melting
23	*16:25*	129	Zhao	A Single Plume Upwelling on Lunar Near Side that Provides a Source for Titanium-Rich Volcanism
24	*16:40*	049	Garcia	An International Team to Create Reference Models and Data Sets for Moon Seismology
25	*16:55*	044	Gillet (presented by Calvet)	Characterization of Shallow Moonquakes and the Megaregolith: New Insights from Apollo Data
26	*17:10*	130	Kawamura	Future Seismic Exploration on the Moon: Possible Launch Opportunity from Asia

Poster session from ~17:30 to 19:00 (cocktail and drinks sponsored by iSpace)

Tuesday 15th May 2018				
08:30		Registration		
All talks: 15 mins (including Q&A)				
Remote Sensing and Physical Implications **Chair: Pinet**				
SN	***Time***	**Abstract #**	**Author**	**Title**
27	*09:00*	033	Wohler	Correlation Between Lunar Soil Composition and Weakly Bounded Surficial OH/H2O Component
28	*09:15*	116	Denevi	Space Weathering and the Stratigraphy of the Lunar Regolith
29	*09:30*	120	Greenhagen	Investigating Thermal Emission from the Lunar Epiregolith
30	*09:45*	136	Martin	Modal Mineralogy and Maturity Estimates of Apollo 14, 15, and 16 Soils using FTIR and QUEMSCAN Techniques
31	*10:00*	117	Patterson	Mini-RF S- and X-band Bistatic Radar Observations of the Moon
32	*10:15*	007	Liu	Regolith Mixing by Impacts: Lateral Diffusion of Basin Melt
33	*10:30*	064	Klima	Integrating Crystal Chemistry with Laboratory Analysis to Model Bound and Adsorbed OH- and H2O
10:45 – 11:05 Tea/coffee break				
Remote Sensing and Physical Implications (Cont'd) **Chair: Chevrel**				
34	*11:05*	034	Wohlfarth	Simulation of the Effect of Space Weathering on the 3-micrometer Absorption Band based on Mie Theory**.**
35	*11:20*	115	Cahill	Scrutinizing the Presence of LAMP Identified Lunar Swirls Relative to Modeled Magnetic Sources
36	*11:35*	138	Pieters	What Lunar Swirls Represent (....probably)
37	*11:50*	072	Kreslavsky	Dependence of Albedo on Slope in Lunar Highlands: Results from LOLA Normal Reflectance Data Analysis
38	*12:05*	109	Speyerer	Investigating Recent Surface Changes with Temporal Image Pairs and Photometric Sequences
39	*12:20*	091	Hiesinger	The Potential LUNA-GLOB Landing Site: Contributions of Lunar Basin Ejecta Materials
40	*12:35*	146	Jawin/Schmidt	Lunar Science for Landed Missions Workshop Findings Report (https://lunar-landing.arc.nasa.gov/downloads/LunarLandedScience_Summary_180315.pdf)

13:00 – 14:00 - Lunch (provided onsite)				
Sample Analysis and Experiments **Chair: Anand**				
41	*14:00*	118	Greenwood	Oxygen Isotope Evidence for a High-Energy Moon-Forming Giant Impact and Early Delivery of Earth's Water.
42	*14:15*	150	Poitrasson	Impact of Mineral-Scale Isotopic Heterogeneity on Iron Isotope Composition Estimates of Lunar Igneous Reservoirs
43	*14:30*	029	Furi	The Noble Gas Bouillabaisse in Apollo 15426 Green Glasses
44	*14:45*	105	Stephant	Abundance and Isotopic Composition of Hydrogen and Chlorine in Apatite from Lunar Meteorite NWA 10989
45	*15:00*	125	Cernok	Abundance and H Isotopic Composition of Water in Shocked Lunar Apatite from Mg-Suite Rocks
15:15 – 15:40 Tea/coffee				
46	*15:40*	055	Tremblay	Revisiting the 40Ar/39Ar Chronology of Lunar Meteorite NWA 773 Provides New Constraints on its Diachronous Geologic History
47	*15:55*	084	Bell	Understanding the Apollo 15 Magmatic Plumbing System using Crystal Size Distribution Analysis
48	*16:10*	059	Lin	The Origin of the High-TiO2 Lunar Basalts: Constraints from Experiments on Remelting of Shallow Magma Ocean Cumulates
49	*16:25*	142	Riedo	Spatially Resolved Chemical Analysis using a Miniature LIMS System Designed for In Situ Space Exploration Missions
	~16:45 to 18:15 - Poster session ***18:15-19:30 – Stroll by the river to Hotel Dieu / Outside cultural visit*** ***(conference dinner from 19:30)***			

Wednesday 16th May 2018				
08:30	Registration			
All talks: 15 mins (including Q&A)				
Impact and cratering of the Moon / age dating **Chair: Cernok**				
SN	***Time***	**Abstract #**	**Author**	**Title**
50	*09:00*	054	Werner	Lunar Cratering Chronology - Revisited
51	*09:15*	111	Van Der Bogart	Constraining the Age of the Crisium Impact Basin
52	*09:30*	068	Bultel	Spectral Mapping and Crater Statistics Reevaluated for all Apollo Landing Sites
53	*09:45*	095	Iqbal	Studying the Crater Size-Frequency Distribution of the Apollo 12 Landing Site.
54	*10:00*	008	Cadogan	Automated Counting of the Smallest Craters at Lunar Landing Sites
55	*10:15*	112	Mahanti	Investigating Size-Dependent Small Lunar Crater Degradation using Chebyshev Coefficients
56	*10:30*	062	Clark	An Investigation of the Seismic Record around Lunar Lobate Scarps
10:45 – 11:05 Tea/coffee break				
ISRU: Instrumentation and Lunar Simulants **Chair: Favier (Guest expert, former astronaut (STS 78))**				
57	*11:05*	114	Sefton-Nash	ESA's PROSPECT Package For Exploration of Lunar Resources: Investigation Domains
58	*11:20*	135	Levin-Prabhu	Microwave Heating of Lunar Simulants JSC-1A and NU-LHT-3M: Experimental and Theoretical Analysis
59	*11:35*	022	Sperl/Meurisse	Solar Sintering of Lunar Regolith for Shielding Habitats on the Moon
60	*11:50*	009	Denk	Full-Scale Terrestrial Demonstrator for Ilmenite Reduction with Concentrated Solar Power
61	*12:05*	100	Sargeant	Hydrogen Reduction of Ilmenite in a Static System for a Lunar ISRU Demonstration
62	*12:20*	127	Reiss	In-Situ Hydrogen Reduction of Lunar Polar Regolith: from Proof of Concept Experiments with ProSPA to Larger Scale ISRU Demonstrators
63	*12:35*	126	Reiss	Demonstration of Volatiles Extraction from NU-LHT-2M with the ProSPA Instrument Breadboard
12:50 – 14:20 Lunch (sponsored by Team Indus)				

ISRU: Preparation and Commercial Strategies **Chair: Carpenter**				
64	*14:30*	043	Carpenter	Preparing for In Situ Resource Utilisation on the Moon
65	*14:45*	056	Cowley	Spaceship EAC - Overview of Ongoing Initiative Projects Relating to Lunar Exploration at the European Astronaut Centre
66	*15:00*	108	Acierno	Moving Forward after the Google Lunar Xprize, ispace's Plan for the Commercial Exploration and Exploitation of the Moon
67	*15:15*	020	Berinstain	Future Low-Cost Lunar and Planetary Missions Enabled by Commercial Space Companies
68	*15:30*	145	Hegde	TEAMINDUS: Commercial Lunar Exploration Missions and Future Technologies
15:45 – 16:00		**Pinet/Anand**		**Wrap up/Next ELS announcement**
16:00 – 17:00		**Networking event with Champagne (sponsored by Team Indus)**		

Posters: Monday, 14th May (~17:30 – 19:00) and Tuesday, 15th May (~16:45 – 18:15). *Posters can be put up from Monday, 14th May from 08:00; posters should be of no larger than A0 in size (in portrait mode); pins/velcro/tape provided).*				
SN	**Poster #**	**Abs#**	**Presenter**	**Title**
Exploration and Future Missions				
	Lunar settlement and habitat			
69	1	015	Degtyarev	Lunar Industry & Research Base
70	2	021	Saunders	Commercial Lunar Mission Support Services
71	3	019	Chahla	ILWEG Euromoonmars exolab
72	4	026	Foing	ExoLab 2.0
73	5	057	van der Sanden	Optimizing Geological Exploration in an Analogue Lunar Habitat: Sub-System Analysis and Human-Factor Integration
74	6	058	Cowley	LUNA and FlexHab - A Mission Focused Analogue for Preparatory Exploration Activities
75	~~7~~ *(withdrawn)*	~~066~~	~~Hong~~	~~Conceptual Construction Process for Lunar Lava Tube Habitation~~
76	8	076	Dubois	Remote Controlled Telescopes from a Moon Habitat: EUROMOONMARS Project
77	9	093	Pennec	Cryogenic Air Purification for Deep Space Exploration.
	Field trip, EVA operations			
78	~~10~~*(withdrawn)*	~~016~~	~~Da Poian~~	~~CRAFT: Collaborative Rover and Astronauts Future Technology~~
79	11	073	via Espinal	Development of Electrostatic Spacesuit Cleaner for Lunar Exploration Missions
80	12	077	Foing	EUROMOONMARS Field Results & Moonvillage Activities: Update for ELS2018
81	13	096	Foing	MOONMARS Analogue Sample Spectro-Analysis in Laboratory & Field Campaigns
82	14	102	Bessone (presented by Cowley)	An Electronic Fieldbook Supporting Data Collection and Situational Awareness during Astronauts EVA Geologic Traverses on the Lunar Surface
83	15	106	Sauro (presented by Cowley)	Technologies and Operational Concepts for Field Geology and Exploration on the Moon: the ESA PANGAEA-eXstension Campaign in Lanzarote (Canary Archipelago, Spain)
	Mission concept, strategy and technology for Moon exploration			
84	~~16~~*(withdrawn)*	~~017~~	~~Koryanov~~	~~INFLATE: INFlate Landing Apparatus Technology~~
85	17	110	Whittaker	Cuberover: A Low Cost, Reliable Platform for Planetary Exploration
86	~~18~~*(withdrawn)*	~~025~~	~~Pettinelli~~	~~Ground Penetrating Radar for Lunar Subsurface Exploration~~

87	19	123	Sheridan	Penetrator-Deployed Mass Spectrometers for Volatiles Analysis at the Moon
88	20	082	Lasue	Laser-Induced Breakdown Spectroscopy (LIBS): a Technique for Lunar Exploration
89	~~21~~*(withdrawn)*	~~071~~	~~Ahn~~	~~Dust Thermal Vacuum Chamber(DTVC) and Verification of Lunar Construction Technologies in Lunar Surface Environments~~
90	22	075	Karouji	Activity Report on the Landing Site and Return Sample of the Japanese Lunar Science Community in HERACLES Mission
91	23	037	Kerber	Moon Diver: A Discovery Mission Concept for Understanding the History of the Mare Basalts through the Exploration of a Lunar Mare Pit
92	24	035	Neklesa	Exploring New Horizons: EUROMOONMARS Simulation at ESTEC 2017
93	25	132	Hipkin	Lunar Science with HERACLES
Remote Sensing and Geological Implications/Physical Implications				
94	26	088	Chevrel	Investigation of Large Lunar Craters: Present and Future
95	27	083	Orgel	Potential Landing Sites for the Chang'E -4 Exploration Mission to the Apollo Basin, Moon.
96	28	040	Schnuriger	Characterization of Lunar Volcanism Features in the Arago Region, Western Mare Tranquillitatis.
97	29	024	Lee	Possible Impact Melt Lava Tube Skylights Near the North Pole of the Moon
98	30	133	Grava	The LAMP Spectrograph on the Lunar Reconnaissance Orbiter: Lunar Science with Ultraviolet Eyes
99	31	050	Francis	Candidate Selection for Change Detection and DTM Production on the Moon
Lunar Interior: Structure, Differentiation and Evolution of the Moon				
100	32	122	Maurice	Prolonged Lunar Magma Ocean by Heat-Piping from Cumulate Overturn
101	33	053	Drilleau	Seismic Velocity and Crustal Thickness Inversions: Moon and MARS
102	34	060	Fayon	Design and Development of an Interferometric Readout for Planetary Seismometers
103	35	027	Steenstra	Assessment of a High-Energy Origin of the Moon from Metal-Silicate Partitioning of Siderophile Elements at High Temperatures

104	36	028	Steenstra	Evidence for a Sulfur-Depleted Lunar Interior from the Solubility of S in Lunar Melts
Sample Analysis & Experiments				
105	37	039	Muftakhetdinova	Sources and Structures of Metallic Iron on the Moon
106	38	078	Zago Garcia	Investigation on Wetting Behaviour of Lunar Regolith Simulant
107	39	119	Mortimer	Update on the Preparation and Characterization of Carbonaceous Chondrite Standards for Verification of ESA's 'PROSPECT' Package
108	40	131	Cernok	Shock-Induced Microtextures in Lunar Apatite and Merrillite
109	41	099	Barber	PROSPA: An Instrument for Lunar Polar Volatiles Prospecting and In Situ Resource Utilization Proof of Concept
Impact and Cratering on the Moon/Age dating				
110	42	103	Michael	Evolution of the Presence of Impact Melt at the Near-Surface of the Moon
111	43	098	Cahill	Detection and Characterization of Present Day Lunar Impact Craters with MINI-RF/GOLDSTONE X-BAND Bistatic Observations
112	44	113	Ravi	Terrace Width Variations In Fresh Lunar Craters
ISRU Instrumentation and Lunar Simulants				
113	45	048	Calzada-Diaz	Commercial Exploration of the Moon: ispace's Polar Ice Explorer
114	46	090	Adachi	Granular Vibration-Pumping System for ISRU Missions on the Moon
115	47	067	Celotti	MESG - Moon Energy Storage and Generation: Concept Design and Analysis
116	48	124	Denk	Basics of Concentrated Solar Power for Moonwalkers
117	49	092	Pitcher	Volatile Extraction and Detection From Frozen Lunar Regolith Simulants in Preparation for the LUVMI Rover
118	50	089	Engelschion	EAC-1A: Evaluation of a Basanitic Material as a Novel Large-Volume Lunar Regolith Simulant
119	51	080	Donaldson Hanna	Update on the Characterization of Lunar Highlands Regolith Simulants in Preparation for Drilling and Sampling into the Polar Regolith by ESA's PROSPECT Package
120	52	061	Lim	Numerical Modelling of Microwave Sintering of Lunar Simulants under Near Lunar Atmospheric Condition
Miscellaneous				
121	53	051	Manaud	OpenPlanetaryMap: Building the first Open Planetary Mapping and Social

				Platform for Researchers, Educators, Storytellers, and the General Public
122	54	107	Schmitt	SSHADE: The European Solid Spectroscopy Database Infrastructure
123	55	036	Law/Day	NASA'S MOON TREK: Extending Capabilities for Lunar Mapping and Modeling.
124	56	121	Anand	The Lunar Meteorite Virtual Microscope Collection
125	57	045	Zaklynsky	Developing Structures For An International Art Gallery on the Moon

List of contributors

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