

From the Heliosphere to Astrospheres - Lessons for Exoplanets and their Habitability

779. WE-Heraeus-Seminar

16 – 20 January 2023

at the Physikzentrum Bad Honnef/Germany

**WILHELM UND ELSE
HERAEUS-STIFTUNG**



Program (CET)

Sunday, 15 January 2023

17:00 – 21:00 ARRIVAL and REGISTRATION

18:30 *BUFFET SUPPER*

Monday, 16 January 2023

07:30 *BREAKFAST*

09:00 – 09:15 Organizers **Welcome**

09:15 – 09:45 Athanasios
Papaioannou
(ONLINE) **The Case of Empirical Solar Energetic
Particle Scaling Relations**

09:45 – 10:15 Svetlana Berdyugina **Exoplanet Surface Structures**

10:15 – 10:45 *COFFEE BREAK*

10:45 – 11:15 Adriana Valio **Stellar Activity: Correlation Between
Starspots and Superflares**

11:15 – 11:45 Brett Morris
(ONLINE) **Fading Memories of Magnetic Youths**

11:45 – 12:00 Judy Chebly **Quantification of the Environment of
Cool Stars Using Numerical
Simulations**

12:00 – 12:30 **Discussion**

12:30 – 14:00 *LUNCH BREAK*

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14:00 – 14:45	Maximilian Günther	Habitable (?) Worlds and Stellar Flares
14:45 – 15:15	Meng Jin	Global Magnetohydrodynamics Modeling of Solar Coronal Mass Ejections and Application to Solar Analogs
15:15 – 15:45	Frederic Effenberger	Modelling Stellar Energetic Particle Environments of Planets in Habitable Zones based on Stellar Activity
15:45 – 16:15	Junxiang Hu	Stellar CME-Driven Energetic Particles Events from Young Solar-like Stars
16:15 – 16:45	<i>COFFEE BREAK</i>	
16:45 – 17:15	Julián David Alvarado-Gomez	Coronal Mass Ejections in Magnetically Active Stars
17:15 – 17:30	Stefan Jorda	About the Wilhelm and Else Heraeus Foundation
17:30 – 18:15	Discussion	
18:15 – 19:30	<i>DINNER</i>	
19:30	Tilman Spohn	Evening Lecture: On the Geophysics of (Exo) Planets

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Tuesday, 17 January 2023

07:30	<i>BREAKFAST</i>	
09:00 – 09:45	Klaus Scherer	Habitable Astrospheres
09:45 – 10:15	Theresa Lüftinger	Living Around Young Suns: Magnetic Fields, Winds and Atmospheric Erosion around Young Stars and Implications for Habitability
10:15 – 10:45	<i>COFFEE BREAK</i>	
10:45 – 11:15	Konstantinos Dialynas	The Global Heliosphere: In-situ Ions from the Voyagers and Remotely Sensed ENAs from Cassini
11:15 – 11:45	Jeffrey Linsky	New Results Concerning the Local Interstellar Medium: Inhomogeneity, Interactions with Helio/astrospheres, and Pressure Balance
11:45 – 12:00	Dominik Bomans	Observations of Astrospheres from O to M Stars
12:00 – 12:30	Discussion	
12:30 – 14:00	<i>LUNCH BREAK</i>	
14:00 – 14:45	Nicholas Eugene Engelbrecht (presented by Klaus Scherer)	On the Three-Dimensional Transport of Galactic Cosmic Rays in Astrospheres
14:45 – 15:15	Donna Rodgers-Lee	The Energetic Particle Environment of Sun-like and M Dwarf Stars
15:15 – 15:45	Veerle Sterken	Synergies Between Dust and Heliospheric/Astrospheric Science
15:45 – 16:15	Lennart Baalman	Synthetic Astrosphere Observations: The Intricate Role of Interstellar Dust
16:15 – 16:45	<i>COFFEE BREAK</i>	
16:45 – 17:15	Kevin Heng	The CHEOPS Mission: Selected Highlights of Scientific Results

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17:15 – 18:15 **Discussion**

18:15 *HERAEUS DINNER at the Physikzentrum
(cold & warm buffet, with complimentary drinks)*

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Wednesday, 18 January 2023

07:30	<i>BREAKFAST</i>	
09:00 – 09:45	Heike Rauer	The PLATO Mission
09:45 – 10:15	Francesco Pepe	Observing Exoplanets with ESPRESSO
10:15 – 10:45	<i>COFFEE BREAK</i>	
10:45 – 11:00	Dominique Meyer	3D MHD Astrospheres: Applications to IRC-10414 and Betelgeuse
11:00 – 11:15	Julien Dörner	CRPropa 3.2 - An Advanced Framework for High-energy Particle Propagation in Extragalactic and Galactic Spaces
11:15 – 11:30	Nikoleta Ilic	Tidal Star-planet Interaction in Planet-hosting Wide Binaries
11:30 – 11:45	Yu Xu	Simulations of Stellar CMEs and their Responses in Synthetic Spectra
11:45 – 12:00	Poster Flash Presentations	
12:00 – 12:30	Discussion	
12:30 – 12:45	Conference Photo (outside at the main entrance)	
12:45 – 14:00	<i>LUNCH BREAK</i>	
14:00	Excursion	
18:15	<i>DINNER / NETWORKING</i>	

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Thursday, 19 January 2023

07:30	<i>BREAKFAST</i>	
09:00 – 09:45	Lena Noack	Interior Heating and Outgassing of Rocky Exoplanets
09:45 – 10:15	Ekaterina Ilin	Magnetic Star-planet Interactions
10:15 – 10:45	<i>COFFEE BREAK</i>	
10:45 – 11:15	Jens Hoeijmakers	High Resolution Spectroscopy of Ultra-hot Gas Giant Exoplanets
11:15 – 12:00	Katja Poppenhäger	The Young Planets in the V1298 Tau System and their Atmospheres
12:00 – 12:30	Discussion	
12:30 – 14:00	<i>LUNCH BREAK</i>	
14:00 – 14:45	Vera Dobos	Moons of Exoplanets: Formation, Orbital Stability and Habitability
14:45 – 15:15	Harish Vedantham	Radio Detection of Extrasolar Space Weather and Magnetic Fields
15:15 – 15:45	Joachim Saur	Brown Dwarfs as Ideal Candidates for Detecting UV Aurora Outside the Solar System: Hubble Space Telescope Observations of 2MASS J1237+6526
15:45 – 16:15	Evangelia Samara (ONLINE)	Which Terrestrial Exoplanets Deserve More Scrutiny for Atmosphere Viability?
16:15 – 16:45	<i>COFFEE BREAK</i>	
16:45 – 17:00	Florian Ränger	Exomoon-induced Radial Velocity Signatures in Spectra of Exoplanetary Atmospheres
17:00 – 17:15	Giulia Roccetti	Long-term Presence of Liquid Water on the Surface of Exomoons Orbiting Ejected Free-floating Planets
17:15 – 18:15	Discussion	

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18:15 – 19:30 *DINNER*

19:30 **Poster Session**

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Friday, 20 January 2023

07:30	<i>BREAKFAST</i>	
09:00 – 09:45	Konstantin Herbst	Modeling the Impact of Cosmic Rays on (Exo)planetary Atmospheres
09:45 – 10:15	Miriam Sinnhuber	The Impact of Stellar Energetic Particles on the Composition of Planetary Atmospheres
10:15 – 10:45	<i>COFFEE BREAK</i>	
10:45 – 11:15	John Lee Grenfell	Effects of High Energy Particles on Atmospheric Chemistry in the Solar System and Beyond
11:15 – 11:45	Paul Rimmer	Timing is Everything: Kinetics of UV-Driven Prebiotic Chemistry
11:45 – 12:30	Discussion	
12:30	<i>LUNCH</i>	

End of Seminar / Departure