

# THURSDAY, NOV 25

07:00 **Breakfast**

09:00 **Kevin Heng (University of Bern)**  
The future of exoplanet science at LMU Munich

## RESEARCH UNIT OVERVIEW TALKS

09:30 **Martin Beneke (TUM)** **RU-A**  
09:55 **Stefan Schönert (TUM)** **RU-B**  
10:20 **Eiichiro Komatsu (MPA)** **RU-C**  
10:45 **Tea and Coffee Break**  
11:10 **Volker Springel (MPA)** **RU-D**  
11:35 **Dieter Braun (LMU)** **RU-E**

12:00 **Lunch break**

14:00 **Hannes Mutschler (TU Dortmund)** **RU-E**  
RNA catalysis in heterogeneous reaction environments  
14:30 **Cesar Hernandez-Aguayo (MPA)** **RU-D**  
The MillenniumTNG project  
14:55 **Alexandre Barreira (ORIGINS Fellow)** **RU-C**  
Connecting the visible Universe to the dark  
15:20 **Henrique Rubira (TUM)** **RU-C**  
Effect of density fluctuations on gravitational wave production in first-order phase transitions

15:45 **Tea and Coffee Break**

16:15 **Hanno Filter (TUM)** **Seed Money**  
Spin-sensitive ultra-cold neutron detection  
16:25 **Roman Gernhäuser (TUM)** **Seed Money**  
Meanders to count neutrons  
16:35 **Luca Pattavina (TUM)** **Seed Money**  
Detecting supernova neutrinos with archaeological Pb  
16:45 **Katrin Penski (LMU)** **Seed Money**  
Photon detection by structured converter layers in micro-pattern gaseous detectors  
16:55 **Christoph Jagfeld (LMU)** **Seed Money**  
Initial studies on the production of an electret based micro pattern gaseous detectors  
17:05 **Lucia Canonica (MPP)** **Seed Money**  
Diamond detectors for low-mass dark matter searches  
17:15 **Lucia Canonica (MPP)**  
Transition edge sensors for dark matter and neutrino physics applications

**Venue:**  
Kloster Irsee  
Klosterring 4  
87660 Irsee

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17:25 **Luca Pattavina (TUM)** **Invest**  
A new-generation dilution refrigerator for cryogenic detector R&D  
17:35 **CLOSING REMARKS/END OF SCIENCE WEEK 2021**  
18:00 Bus leaves for Donnersbergerbrücke & Garching Campus

**VIRTUAL PARTICIPATION  
VIA ZOOM:**

<https://tum-conf.zoom.us>  
Meeting ID: 627 1983 7285  
Passcode: 147160

# Science Week

Astro-, Bio- & Particle Physics

**THE ANNUAL SCIENCE MEETING OF  
THE EXCELLENCE CLUSTER ORIGINS  
22 – 25 November 2021**

**Venue:**  
Kloster Irsee  
Klosterring 4 · 87660 Irsee

**More information:**  
[www.origins-cluster.de/scienceweek2021](http://www.origins-cluster.de/scienceweek2021)



# MONDAY, NOV 22

12:00 Lunch

## OPENING AND WELCOME

13:15 Andreas Burkert (LMU) / Stephan Paul (TUM)

## RESEARCH UNIT HIGHLIGHT TALKS

13:30 Lorenzo Tancredi (TUM) **RU-A**

Scattering amplitudes in QCD at three loops

13:55 Veronica Errasti Diez (Vera Rubin Fellow) **RU-A**

Quantization of generalized massive electrodynamics

14:20 Diederik Kruijssen (University of Heidelberg) **RU-D**

The multi-scale baryon cycle from clouds to galaxies

14:50 Torsten Ensslin (MPA) **RU-D**

Galactic dust tomography

15:15 Coffee, Tea & AR/VR presentation

15:45 Ulrich Haisch (MPP) **RU-B**

Dark matter vs. the LHC: the good, the bad and the ugly

16:15 Stefan Schönert (TUM) **RU-B**

LEGEND-1000 and the future of neutrinoless double beta decay search


## ORIGINS PHD AWARDS 2021 – SESSION 1

16:40 Wolfram Weise (TUM)  
Laudatio to Dimitar Mihaylov

16:50 Dimitar Mihaylov (TUM)  
ALICE: A new laboratory to investigate and constrain exotic hadron-hadron interactions

17:25 Thomas Kuhr (LMU) **RU-A**  
Are leptons less universal than we thought ?

18:30 Dinner

20:30 Halina Abramowicz (Tel Aviv University)   
The future of experimental particle physics

21:00 End of meeting

# TUESDAY, NOV 23

07:00 Breakfast

## ORIGINS PHD AWARDS 2021 – SESSION 2

09:00 Hermann Wolter (LMU)  
Laudatio to Theo Glauch

09:10 Theo Glauch (TUM)  
The Origin of high-energy cosmic particles: IceCube neutrinos and the blazar case

09:45 Elisa Resconi (TUM) **Invest Highlight CN-6**  
The Pacific Ocean Neutrino Experiment (P-ONE) and ORIGINS II

# TUESDAY, NOV 23

10:10 Coffee, Tea & AR/VR presentation

10:35 Barbara Ecolano (LMU) **Invest Highlight CN-2**  
Space based spectroscopy of exoplanets with Twinkle

11:00 Dieter Lüst (LMU, MPP) **CN-1**  
Black hole theory special: black holes and the swampland

11:30 Günther Hasinger (ESA) **CN-1**  
Exploring the high-redshift PBH- $\Lambda$ CDM Universe: early black hole seeding, the first stars and cosmic radiation backgrounds

12:00 Lunch break

14:00 Moritz Fischer (Universität Hamburg) **CN-3**  
Simulations of dark matter with frequent self-interactions

14:30 Anja Brenner (TUM) **CN-3**  
Impact of operator interference in dark matter direct detection experiments

14:55 Daniel Gruen (LMU) **CN-4**  
Cosmological insights from the Dark Energy Survey

15:20 Sherry Suyu (TUM, MPA) **CN-4**  
The Hubble tension

15:45 Tea and Coffee Break


16:15 Corinna Kufner (Harvard University) **RU-E**  
UV-induced photochemistry in prebiotic lakes

16:45 Christof Mast (LMU) **Seed Money**  
Determination of sequence-dependent UV sensitivity of polynucleotides by next generation sequencing

16:55 Oliver Trapp (LMU) **Seed Money**  
Initial steps towards an evolutionary system

17:05 Zoe Todd (University of Washington) **RU-E**  
Ferrocyanide survival under near ultraviolet (300-400 nm) irradiation on the early Earth

18:30 Dinner

20:30 Richard Ellis (University College London)   
The quest for cosmic dawn: fingers crossed for the James Webb Space Telescope

21:00 End of meeting

# WEDNESDAY, NOV 24

07:00 Breakfast

09:00 Lukas Heinrich (CERN) **ODSL**  
Data science and the ODSL

09:30 Francesca Capel (TUM) **ODSL**  
Evaluating cosmic coincidences

# WEDNESDAY, NOV 24

9:55 Jakob Knollmüller (TUM) **ODSL**  
Bayesian reasoning with trained neural networks

10:20 Tea and Coffee Break

10:40 Mathias Garny (TUM) **CN-3**  
CN-3 Dark Matter overview

11:05 Nahuel Ferreiro Iachellini (MPP) **ODSL**  
The Dark Matter Data Center (DMDC)

11:30 Anthony Hartin (LMU) **C2PAP**  
C<sup>2</sup>PAP Highlight Talk: Monte Carlo challenges for non perturbative QED

11:55 Florian Kuchler (TUM) **Seed Money**  
Mesosphere magnetometry

12:05 Michael Willers (TUM) **Seed Money**  
LARBox: A glovebox facility for characterizing cryogenic electronics in liquid Ar

12:15 Martin Losekamm (TUM) **Seed Money**  
A compact and triggerless multichannel sampling ADC for particle detectors

12:25 Lunch break

14:00 Matthias Meier (TUM) **LRSM**  
The science case for CubeSat Compol mission of LRSM

14:10 Ulrich Walter (TUM) **LRSM**  
ORIGINS satellite missions and the future of LRSM

## ANNUAL GENERAL ASSEMBLY OF ALL CLUSTER MEMBERS

14:40 ORIGINS summary (Andreas Burkert/Stephan Paul)

15:00 Administration summary (Ina Haneburger, Alice Smith-Gicklhorn, Stefan Waldenmaier)

15:30 Introduction to ORIGINS Scientific Advisory Committee members (Stephan Paul/Andreas Burkert)

16:00 Tea and Coffee Break

16:25 C<sup>2</sup>PAP summary (Klaus Dolag)


16:40 MIAPP summary (Rolf Kudritzki)

16:55 LRSM summary (Martin Losekamm)

17:10 ODSL summary (Allen Caldwell)

17:25 IDSL summary (Dieter Braun)

18:00 Dinner

20:00 Ulrich Walter (TUM)   
Beam me up, Scotty – The physics of Star Trek

21:00 End of meeting