

20 Jahre Promotionspreis



## Symposium: 20 Jahre Promotionspreis

der Stiftung für Physik und Astronomie in Bonn  
in Kooperation mit der Wilhelm und Else-Heraeus-Stiftung

2. Februar 2024, 14 Uhr bis ca. 18 Uhr im Wolfgang-Paul-Hörsaal



# Programm

## 14:00 Uhr **Begrüßung**

Prof. Walter Witke, Dekan der math.-nat. Fakultät  
Prof. Manuel Drees, für die Fachgruppe Physik-Astronomie  
Werner Ballhausen, Vorstandsvorsitzender der Bürgerstiftung Bonn

## 14:20 Uhr **Preisverleihung 2024 und Vortrag des Preisträgers**

Dr. Jakob den Brok:

*Unraveling Molecular Gas Conditions across Nearby Galaxies  
with CO Isotopologues*

### **Vorträge der Preisträger**

#### **15:00 Uhr "Scientific discovery in the era of artificial intelligence"**

**Prof. Tobias Golling, Teilchenphysik Department, Universität Genf  
Preisträger 2006**

We write year 2 of large language models which heralded a phase transition in artificial intelligence (AI) from specialist models to general-purpose assistants. These models entail a transformative potential for science, prompting us to rethink foundational concepts, including traditional simulation, modeling, and data analysis approaches. AI emerges as a universal accelerator for gaining knowledge and provides an opportunity for a great leap forward of humanity. CERN's Large Hadron Collider (LHC) is one of the most compelling and promising scientific projects ever undertaken by mankind and the complexity of its data makes it an ideal use case for AI applications. The state of the art of AI in high energy physics will be presented with focus on the search strategy for physics beyond the standard model.

## ***15:30 Uhr "Energy Transition 2024 - More than just 'green' electricity"***

**Dr. Michael Arnold**  
**Geschäftsführer Stadtwerke Duisburg Energiehandel GmbH und**  
**Bereichsleiter Strom- und Fernwärmeerzeugung Stadtwerke Duisburg AG**  
**Preisträger 2008**

"Climate change and the energy transition are increasingly shaping the debate in politics and public discourse. Particularly, companies in the energy industry are facing immense technical and economic challenges as a result. While in the past, the transformation of power generation was the main focus, currently, other sectors such as heat supply are coming into the spotlight of the discussion."

## ***16:00 Uhr Kaffeepause***

## ***16:45 Uhr "How Fast Do Tunneling Particles Move?"***

**Prof. Dr. Jan Klärs**  
**Professor für Physik, Universität Twente**  
**Preisträger 2012**

Quantum mechanical tunneling has been a known phenomenon since the inception of quantum mechanics and is essential for many vital processes, such as nuclear fusion in our sun. Surprisingly, some aspects of this phenomenon remain highly controversial to this day, for example, the question of the temporal duration of tunneling processes. In a recent experiment conducted by our research group, we investigate this topic by examining the speed of a tunneling particle stream composed of effectively massive photons at a potential step. In this presentation, I will present the results of our measurements.

## ***17:15 Uhr "The isotropy of the Universe as seen through galaxy clusters"***

**Dr. Nikolaos Migkas**  
**Oort postdoctoral fellow at Leiden Observatory, Leiden University**  
**Preisträger 2022**

The standard cosmological model postulates that the Universe is the same in all directions, ie, isotropic. Using galaxy clusters, the largest virialized systems in the Universe, we show that the local Universe appears anisotropic at a 5.4 sigma level. This constitutes the most robust evidence to date for a departure from cosmic isotropy.

***Ca. 18:00 Uhr Ende***