

## T 65: Invited Topical Talks IV

Time: Thursday 13:45–15:45

Location: ZHG010

**Invited Topical Talk** T 65.1 Thu 13:45 ZHG010  
**Searching for Axions and other Light Bosons at DESY** —  
 ●JACOB EGGE — Deutsches Elektronen-Synchrotron DESY, Hamburg,  
 Germany

Light bosons, including the axion and axion-like particles (ALPs) inspired by string theory, are compelling candidates for new physics. These particles are of interest not only for their potential to address the strong CP problem but also as promising dark matter candidates and mediators of novel interactions. Experimental searches for light bosons span three main approaches: haloscopes probe signals from the galactic dark matter halo; helioscopes explore particles produced in the sun; and laboratory-based experiments aim to produce and detect these particles in controlled settings.

DESY is uniquely positioned to potentially host cutting-edge experiments in all three categories, including the haloscope MADMAX, the helioscope IAXO, and the light-shining-through-wall experiment ALPSII. In this talk, I will provide an update on DESY's efforts to search for axion-like particles, highlighting the results of the initial data-taking campaigns for MADMAX and ALPSII.

**Invited Topical Talk** T 65.2 Thu 14:15 ZHG010  
**14 years of coordinated outreach for particle physics: methods, impact and prospects** — ●SASKIA PLURA<sup>1</sup>, UTA BILOW<sup>2</sup>, MICHAEL KOBEL<sup>2</sup>, ACHIM DENIG<sup>1</sup>, HEIKE VORMSTEIN<sup>1</sup>, and MIRCO CHRISTMANN<sup>1</sup> for the Netzwerk Teilchenwelt-Collaboration —  
<sup>1</sup>Johannes Gutenberg-Universität, Mainz — <sup>2</sup>TU Dresden, Dresden

The outreach program "Netzwerk Teilchenwelt" was created in 2010 as a means of opening the LHC and its data for public engagement with science, ranging from analysis of original data to research participation in high school theses. Now, 14 years later, the network has expanded to more than 30 institutions with more than 200 scientists participating and includes now also hadron, nuclear and astroparticle physics.

The impact of a coordinated, large scale outreach program is profound: by focusing mostly on high school students and teachers, "Netzwerk Teilchenwelt" has managed to bridge the gap between scientists and schools. A three step program for students provides guidance and fosters interest, while the consecutive "Fellows" program allows for direct connection between researchers and university students. Alongside these programmes, a multitude of events for the general public help push particle physics into view.

The efforts of the community have shown to have long-term effects. This talk provides insights into the methods and the achievements of "Netzwerk Teilchenwelt" as a coordinated outreach program and its

future prospects.

**Invited Topical Talk** T 65.3 Thu 14:45 ZHG010  
**The Emerging Population of Seyfert Galaxies as Neutrino Sources in IceCube** — ●CHIARA BELLENGHI, TOMAS KONTRIMAS, and ELENA MANAO for the IceCube-Collaboration — Technical University of Munich

The IceCube detection of neutrinos from the X-ray-bright Seyfert galaxy NGC 1068, combined with the lack of a gamma-ray counterpart, suggests that gamma-ray hidden cores of Active Galactic Nuclei (AGN) could be powerful cosmic-ray accelerators. The X-ray-bright corona, near the AGN supermassive black hole, provides a suitable environment for neutrino production and gamma-ray absorption at the same time. This talk will review recent IceCube results from searches for extragalactic neutrino sources, adding to the growing evidence that X-ray-bright, non-blazar AGN could be the first emerging population of neutrino sources.

**Invited Topical Talk** T 65.4 Thu 15:15 ZHG010  
**First detection of neutrinos in water-based liquid scintillator at ANNIE** — ●JOHANN MARTYN for the ANNIE-Collaboration — Johannes Gutenberg-University Mainz

Water-based liquid scintillator (WbLS) is a novel detector medium that allows for the separation of the scintillation and Cherenkov components of a signal. As such, it is of great interest for the development of future hybrid neutrino detectors, allowing for a low energy-threshold, directional event reconstruction, reconstruction of hadronic recoils, and enhanced particle identification.

The Accelerator Neutrino Neutron Interaction Experiment (ANNIE) is a 26-ton gadolinium-loaded water Cherenkov neutrino detector installed on the Booster Neutrino Beam (BNB) at Fermilab. As its main physics goals the experiment aims to investigate neutrino-nucleus interactions and cross sections. Additionally, ANNIE has an equally important focus on the research and development of new detector technologies, such as WbLS and Large Area Picosecond Photodetectors (LAPPDs).

This talk presents the deployment of a 70cm x 90cm WbLS vessel in ANNIE and the subsequent first detection of neutrinos in WbLS. The successful observation of both scintillation and Cherenkov light in ANNIE corresponds to a proof-of-concept for the hybrid event detection. This allows for the development of reconstruction and particle identification algorithms, as well as dedicated analyses in ANNIE, that make use of both the Cherenkov and scintillation component.

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