Working Group on Physics, Modern IT and Artificial Intelligence Arbeitskreis Physik, moderne Informationstechnologie und Künstliche Intelligenz (AKPIK)

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Overview of Invited Talks and Sessions

(Lecture hall H5; Poster P2)

Invited Talks

AKPIK 3.1	Tue	11:00–11:30	H5	**3D Integration Towards Autonomous Optical Neural Networks** — •Adrià Grabulosa, Anas Skalli, Daniel Brunner
AKPIK 4.1	Tue	14:00–14:30	H5	**The Scaling of Intelligence: From Transformers to Agentic AI** — •Oliver Mey
AKPIK 4.2	Tue	14:30–15:00	H5	**Inverse Design in Electromagnetics with Artificial Intelligence** — •Willie Padilla
AKPIK 4.3	Tue	15:00–15:30	H5	**Inverse design of lateral hybrid metasurfaces with machine learning** — •Rui Fang, Amir Ghasemi, Dagou Zeze, Koen Valk, Yuqing Jiao, Peter Zijlstra, Mehdi Keshavarz Hedayati

Invited Talks of the joint Symposium AI-driven Materials Design: Recent Developments, Challenges and Perspectives (SYMD)

See SYMD for the full program of the symposium.

SYMD 1.1	Mon	15:00–15:30	H1	**Learning physically constrained microscopic interaction models of functional materials** — •Boris Kozinsky
SYMD 1.2	Mon	15:30–16:00	H1	**GRACE universal interatomic potential for materials discovery and design** — •Ralf Drautz
SYMD 1.3	Mon	16:00–16:30	H1	**Multiscale Modelling & Machine Learning Algorithms for Catalyst Materials: Insights from the Oxygen Evolution Reaction** — •Nong Artrith
SYMD 1.4	Mon	16:45–17:15	H1	**Inverse Design of Materials** — •Hongbin Zhang
SYMD 1.5	Mon	17:15–17:45	H1	**Data-Driven Materials Science** — •Miguel Marques

Invited Talks of the joint Symposium AI in (Bio-)Physics (SYAI)

See SYAI for the full program of the symposium.

SYAI 1.1	Thu	9:30–10:00	H1	**Predicting interaction partners and generating new protein sequences using protein language models** — •Anne-Florence Bitbol
SYAI 1.2	Thu	10:00–10:30	H1	**Realizing Schrödinger's dream with AI-enabled molecular dynamics** — •Alexandre Tkatchenko
SYAI 1.3	Thu	10:30–11:00	H1	**Emergent behavior of artificial intelligence** — •Steffen Rulands
SYAI 1.4	Thu	11:15–11:45	H1	**AI in medical research - navigating complexity with AI** — •Daniel Truhn
SYAI 1.5	Thu	11:45–12:15	H1	**Computational Modelling of Morphogenesis** — •Dagmar Iber

Sessions

AKPIK 1.1–1.3	Sun	16:00–18:15	H2	**Hands-on Tutorial: AI Fundamentals for Research (joint session BP/TUT/DY/AKPIK)**

AKPIK 2.1–2.4	Tue	9:30–10:30	H5	**Machine Learning Prediction and Optimization Tasks**
AKPIK 3.1–3.5	Tue	11:00–12:30	H5	**Research with AI: Hardware, Software, Tools**
AKPIK 4.1–4.3	Tue	14:00–15:30	H5	**Focus: Applications of Deep Neural Networks**
AKPIK 5.1–5.19	Thu	15:00–16:30	P2	**Poster**
AKPIK 6.1–6.6	Thu	16:30–18:00	H5	**AI Methods for Materials Science**