

Bad Honnef Physics School

Supported by the Wilhelm and Else Heraeus-Foundation

Physics of imaging: holography, ptychography, tomography et al. & AI

5 July – 10 July 2026, Physikzentrum Bad Honnef, Germany

Organised by

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Phase retrieval, holography, tomography, coded signals and novel contrast mechanisms – Imaging has been enhanced and extended by computational approaches, regularized reconstruction algorithms, and artificial intelligence. When lenses are lacking or limited in performance, such as for hard X-rays, novel schemes of coherent diffractive imaging have emerged, enabling three-dimensional imaging in bulk specimens or tissues. In computational imaging with visible light, coded signals, photon correlations, and quantum entanglement have been started to be exploited. Turbid media and deep tissues become increasingly accessible. Across almost the entire spectral range of electromagnetic waves, and also for particle waves, we can now see novel schemes and applications emerging.

Speakers and topics:

Computational Imaging

- Yoav Shechtman (Haifa, Israel)

X-ray darkfield Imaging

- Kaye Morgan (Melbourne, Australia)

Randomness and Imaging

- Jonathan Dong (Lausanne, Switzerland)

Inverse Problems in Imaging

- Anne Wald (Göttingen, Germany)

X-ray Holography and Phase Retrieval

- Max Langer (Grenoble, France)

X-ray Ptychography

- Pierre Thibault (Trieste, Italy)

Electron Ptychography

- Philipp Pelz (Erlangen, Germany)

Nanoscale X-ray Imaging

- Manuel Guizar Sicaire (Villingen, Switzerland)

Histology with Phase Contrast Imaging

- Anne Bonnin (Villingen, Switzerland)

Tomography I

- Viktor Nikitin (Argonne, USA)

Tomography II

- Joost Batenburg (Leiden, Netherlands)

Magnetic Resonance Imaging

- Mariam Andersson (Copenhagen, Denmark)

Optoacoustic & Speed-of-sound Imaging

- Michael Jaeger (Bern, Switzerland)

AI for Imaging

- Julian Tachella (Lyon, France)

Super-Resolution Imaging

- Rainer Heintzmann (Jena, Germany)

Fees:

Covering full board and lodging at the Physikzentrum Bad Honnef
200 € (for DPG members 100 €).

Application & more information: www.pbh.de



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