

**Friday, 16.05.2025, 1:15 p.m.
in Lecture Hall I of the Physics Institute**

Julia Vogel
TU Dortmund

**„Shedding Light on Dark Matter:
Hunting Axions with Helioscopes“**

Despite 80 years of dark matter research, its nature remains a mystery. Axions have emerged as leading candidates, offering a compelling alternative to Weakly Interacting Massive Particles (WIMPs) — especially as collider and direct detection experiments tighten constraints. Originally proposed to solve a problem in quantum chromodynamics, axions naturally fit into particle physics while also explaining dark matter.

Axion helioscopes, such as the next-generation International Axion Observatory (IAXO) to be set up at DESY (Hamburg), search for solar axions via the Primakoff effect. IAXO aims to improve sensitivity to axion-photon coupling by 1–1.5 orders of magnitude, testing constraints from SN1987A and the axion interpretation of white-dwarf cooling. This talk explores experimental axion searches, with a focus on IAXO and its pathfinder experiment, BabyIAXO—covering their current status and expected impact.

Everybody is welcome, especially students of all semester

