

FAKULTÄT für PHYSIK
LUDWIG-MAXIMILIANS-UNIVERSITÄT
MÜNCHEN/GARCHING

PHYSIK-DEPARTMENT
TECHNISCHE UNIVERSITÄT MÜNCHEN
MÜNCHEN/GARCHING

Garching Maier-Leibnitz-Kolloquium

Donnerstag, 06.05.2021, 16¹⁵ Uhr

Online via ZOOM:

<https://lmu-munich.zoom.us/j/98457332925?pwd=TWc3V1JkSHpyOTBPQVlMelhuNnZ1dz09>

Meeting ID: 984 5733 2925

Passcode: 979953

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COSINUS - throwing light on the long-standing dark matter claim by DAMA/LIBRA with cryogenic NaI detectors

Precision cosmology and astrophysics provide compelling evidence for the presence of dark matter in the universe. All proof of dark matter is based on its gravitational pull, but its nature remains a mystery to this date. Numerous direct dark matter searches aim to detect dark matter particles interacting in earth-bound detectors. DAMA/LIBRA is the only experiment which reports a potential positive dark matter signal. DAMA/LIBRA observes an annual modulation of their event rate, with an overwhelming statistical significance of 12.9 sigma, which fits the expectation of dark matter particles being present in the milky way. The DAMA/LIBRA signal is in tension with results from other experiments. However, a fully model-independent cross-check is absent so far and requires using the same target material: sodium iodide (NaI). The COSINUS experiment aims to do precisely that with novel cryogenic NaI detectors which provide a low threshold for nuclear recoils and particle discrimination on an event-by-event basis. These unique features allow cross-checking the DAMA/LIBRA signal and adding information on the underlying interaction. COSINUS is funded and approved, its construction at the Gran Sasso underground laboratory (LNGS) will begin in summer 2021.

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