CRC 1227
Designed Quantum States of Matter

GUEST LECTURE

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(Guest of Prof. P.O. Schmidt and Prof. Dr. K. Hammerer)

Leibniz Universität Hannover
DQ-mat Colloquium
Thursday, 16 May, 2024, 10.30 am

Vieweg-Building Room 234
Physikalisch-Technische Bundesanstalt,
Bundesallee 100, 38116 Braunschweig

"Quantum Processing Opportunities with Metastable Atomic States"

While it can be useful in some cases to abstract away all but 2 levels of the atoms used for quantum computing, it should not be forgotten that these qubit hosts often have many levels capable of participating in processing tasks. These include long-lived states within hyperfine, Zeeman, and electronic-state structure in atoms, but extend to rotational, vibrational, and more exotic level landscapes if one considers molecules instead of just atoms. Given the effectively atom-limited regime in which many (possibly all) atomic processors currently operate, I will pose the question of how can more-flexible encodings that utilize beyond-qubit levels improve the computational power of these devices.

All DQ-mat members and all interested are cordially invited to attend.