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Physikalisches Kolloquium
Einladung

Physics Colloquium
Invitation

Monday, 28 October 2024


Lecture Hall N24/H13, at 16:15

Coffee and cookies will be served in front of the lecture hall from 16:00

Metabolic Neuroimaging using hyperpolarized ^{13}C MR

Prof. Dr. Myriam Chaumeil

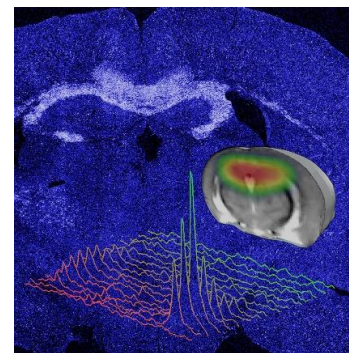
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Hyperpolarized ^{13}C magnetic resonance (MR) is emerging as a powerful tool in studying neurological disorders, offering unprecedented insights into metabolic processes in the brain. This technique leverages the hyperpolarization of ^{13}C -labeled substrates, significantly enhancing signal strength and enabling real-time visualization of dynamic metabolic pathways. Its application to neurological disorders such as Alzheimer's disease, traumatic brain injury or multiple sclerosis holds great promise, as altered metabolism is a hallmark of these conditions. Hyperpolarized ^{13}C MR provides unique advantages over conventional MR spectroscopy, particularly in its ability to track metabolic changes with high temporal and spatial resolution. This technology also holds potential for drug development, as it allows for real-time monitoring of the brain's metabolic response to therapeutic interventions.

In this talk, I will present how the hyperpolarized MR technology can be used for improved diagnosis and treatment monitoring of neurological diseases, including multiple sclerosis, chronic traumatic encephalopathy and Alzheimer's disease. I will also discuss the potential impact of the hyperpolarized MR technology, both for improving our basic understanding of metabolism in pathogenesis, and for advancing clinical care.



Host: Prof. Dr. Martin Plenio, Institute of Theoretical Physics
and Prof. Dr. Fedor Jelezko, Institute of Quantum Optics

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