

Theoretical Physics Division Seminar

Fundamental Research Department
NATIONAL CENTRE FOR NUCLEAR RESEARCH

16.12.2020 (Wednesday); Time: 11:15

The seminar is held online:

https://www.gotomeet.me/NCBJmeetings/bp2_seminar

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“Quantum Simulators of Lattice Gauge Theories”

ABSTRACT:

In my talk I present a review of recent developments in the area of quantum simulators (QS) of lattice gauge theories. I will start with explaining what quantum simulators are, and will discuss various platform for and paradigmatic examples of QS. I will spend some time to explain how can one realize artificial static gauge fields in systems of trapped ultracold atoms, atoms in optical lattices and in synthetic dimensions. Finally, I will focus on quantum simulators of lattice gauge theories and dynamical gauge fields, and present four examples:

- Wegner-Kitaev, Kogut-Wilson models
- Fermionic and Bosonic Schwinger model
- Rotor Jackiw-Rebbi model
- Non-Abelian gauge fields via dynamical decoupling

Theoretical ideas and proposals will be confronted with the experimental reality.

Best regards,

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