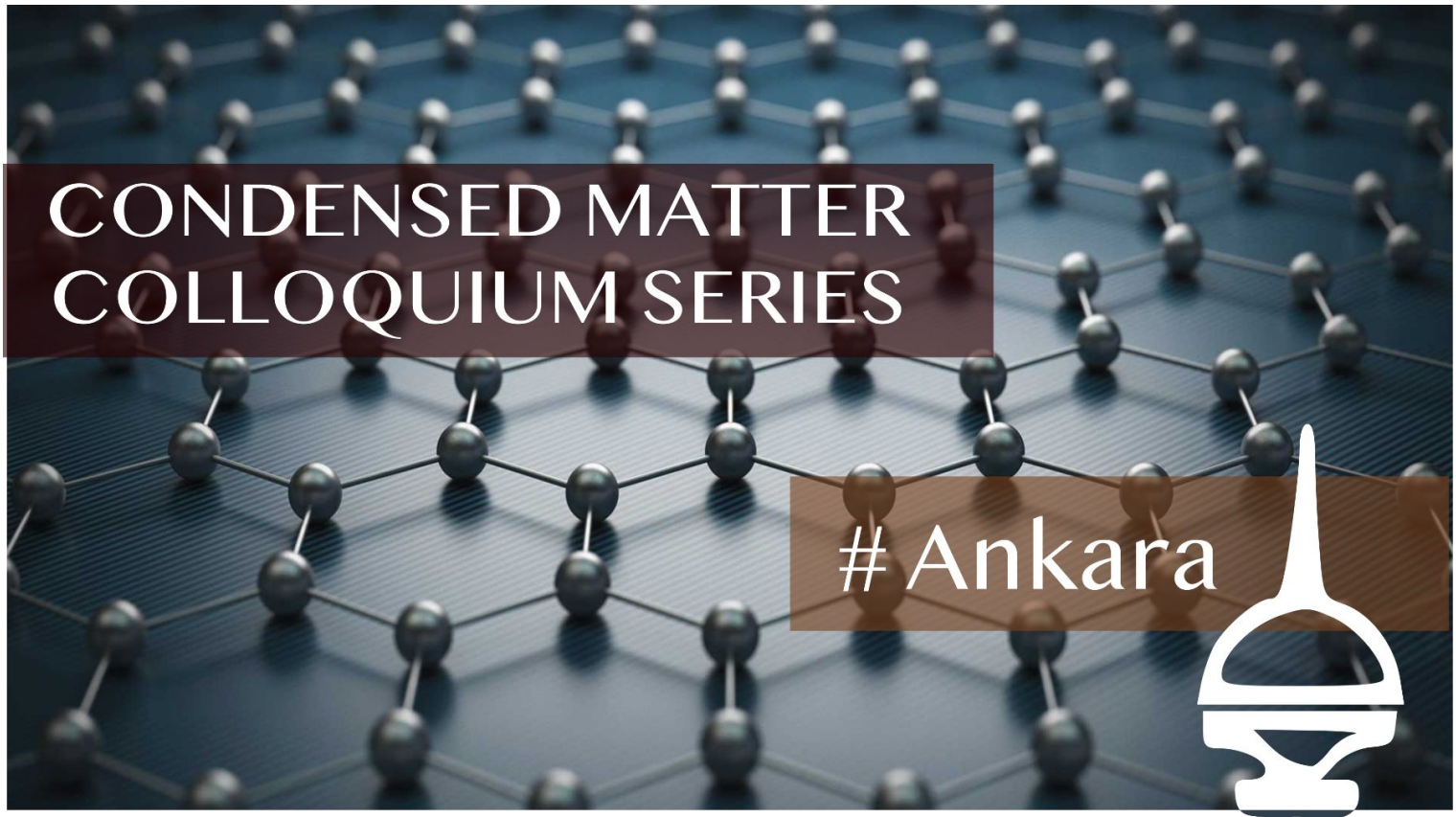

Doga M. Kurkcuoglu

FermiLab Quantum Institute

Quantum Simulation of ϕ^4 theories in qudit systems

We discuss the implementation of quantum algorithms for lattices ϕ^4 theory on circuit quantum electrodynamics (cQED) system. The field is represented on qudits in a discretized field amplitude basis. The main advantage of qudit systems is that its multi-level characteristic allows the field interaction to be implemented only with diagonal single-qudit gates. Considering the set of universal gates formed by the single-qudit phase gate and the displacement gate, we address initial state preparation and single-qudit gate synthesis with variational methods.

March, 22
Tuesday

19:00, (Ankara Time)

Click here for zoom link
Meeting ID: 432 931 6595
Password: 326852

Dr. Doga Kurkcuoglu is a scientist at Fermilab. Dr. Kurkcuoglu's interests are all around quantum - where he worked on various subdisciplines of quantum throughout his career. His current interests are quantum simulation on quantum hardware, quantum technologies, and quantum machine learning algorithms. He obtained his Ph.D. from the Georgia Institute of Technology, and worked at Las Alamos National Laboratory for a while before joining Fermilab.

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