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Virtual meeting room in ZOOM (ID: 969 1069 5572 / PW: 613867)

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Variational quantum computer simulations of complex systems

In order to make use of present days quantum computer hardware, often variational quantum computer simulations (VQCS) are used for tackling complex problems which originate from two classes: the first are classical optimization problems where a quantum supremacy is hoped to be expected such as logistic problems, particle track reconstruction, traffic, etc. The second class comprises systems with a sign problem which are very hard or even impossible to address

with classical computers. In this talk we will describe VQCS of such systems on real quantum hardware at IBMQ and Rigetti. In addition, we show that certain errors appearing on the hardware can be mitigated and we provide a general recipe to analyze the expressivity of quantum circuits.

