NITheP Colloquium

Monday, 05 October 2020, 16h00

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Quantum computing activities at Quantum Artificial Intelligence Laboratory (QuAIL)

Abstract: Quantum computing is an emerging new computational paradigm that promises to revolutionize our lives. The future application for cryptography, material simulation and optimization are only a few examples that can be substantially altered and improved. However, we are still (far) away from having the access to a fully functional quantum computer. Currently the field of quantum computing is in a dynamical progress, allowing us to experiment with small, and noisy quantum computers, that even with their limitations can exhibit nice features.

In this talk, I'll briefly introduce the concept of quantum computation, together with its short history, emphasizing some of the milestones of quantum computing. Next, I'll present subfields of quantum computing focusing on the research activities that are undertaken at NASA Quantum Artificial Intelligence group. Finally, I'll close my presentation with discussion on challenges that are limiting us from achieving fully fault tolerant quantum computers.

Bio: Filip received the BSc degree in Chemistry, MSc degree and PhD degree in Physics from Nicolaus Copernicus University in Torun, Poland. After completion of his PhD studies he joined the group of Professor Petruccione in Durban, South Africa. Afterwards, he moved to Freiburg Germany, where he worked on quantum computing in the group of prof. Buchleitner. Since March 2019 he has been a member of NASA QuAIL group as an Associate Scientist at USRA. He is mainly interested in noise modeling, benchmarking and capabilities of quantum computers. Additionally, he investigates quantum chemistry algorithms from the perspective of quantum computing and machine learning.

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