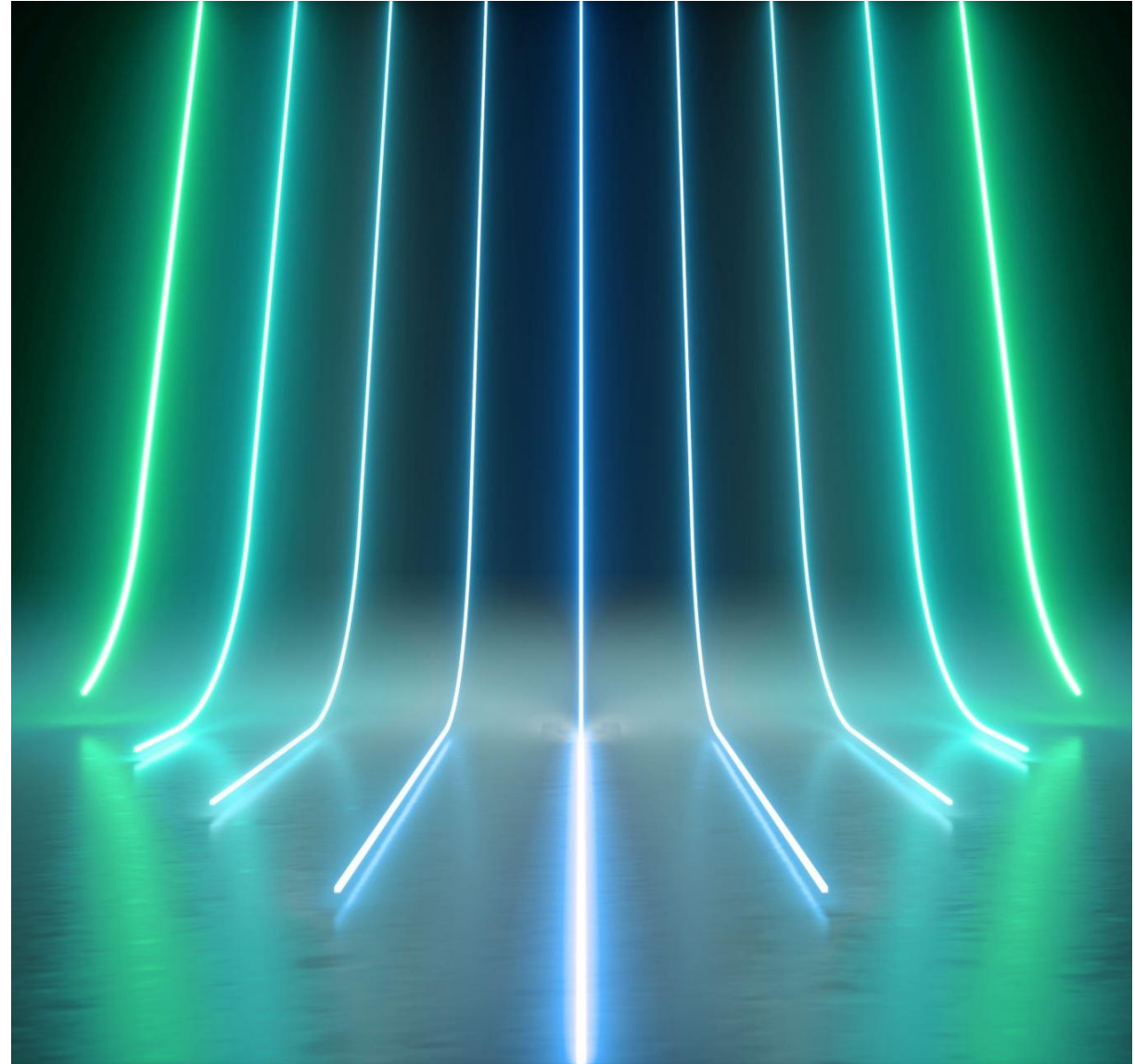


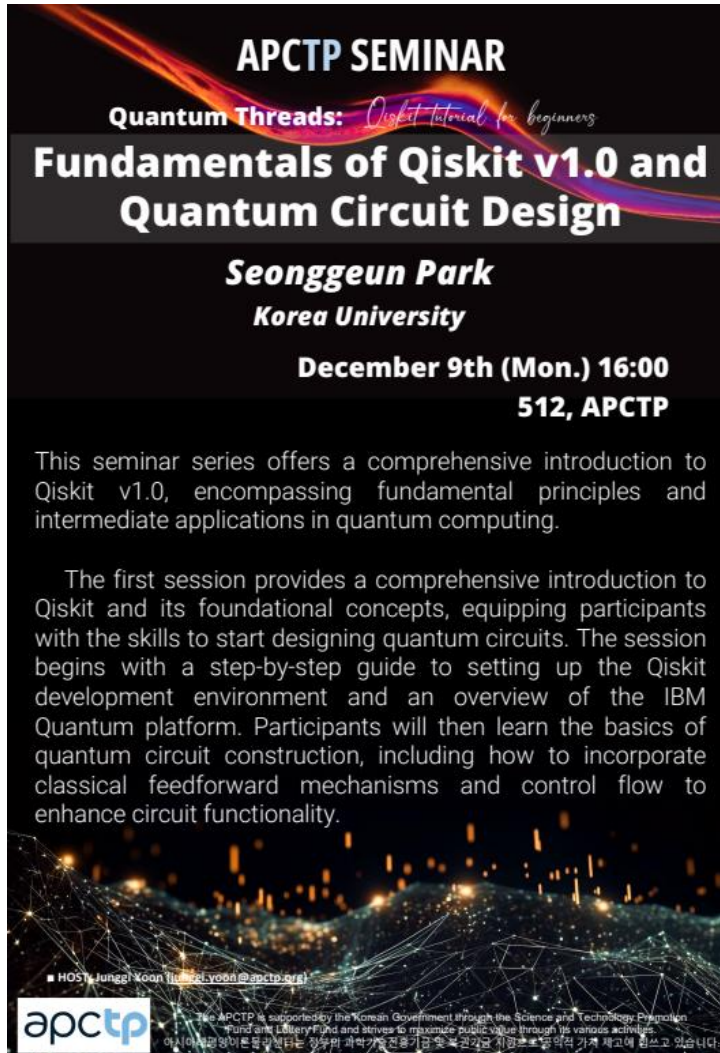


Running and Optimizing Quantum Circuits

Seonggeun Park
Korea University



Qiskit Tutorial for Beginner Series at APCTP



APCTP SEMINAR
Quantum Threads: Qiskit tutorial for beginners
Fundamentals of Qiskit v1.0 and Quantum Circuit Design
Seonggeun Park
Korea University
December 9th (Mon.) 16:00
512, APCTP

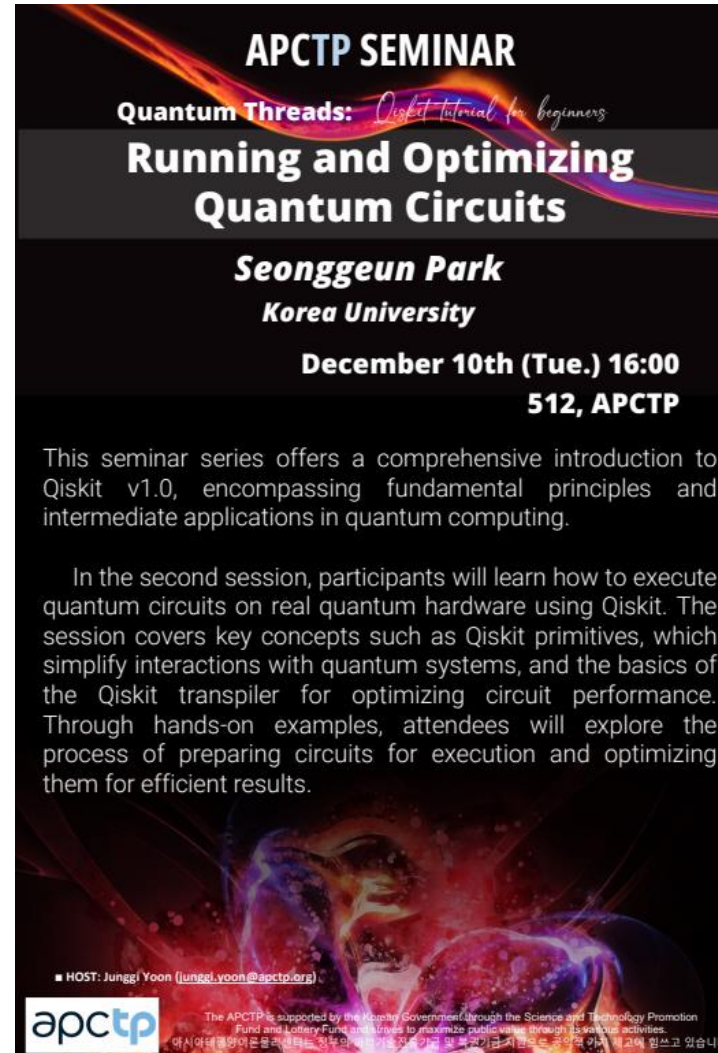
This seminar series offers a comprehensive introduction to Qiskit v1.0, encompassing fundamental principles and intermediate applications in quantum computing.

The first session provides a comprehensive introduction to Qiskit and its foundational concepts, equipping participants with the skills to start designing quantum circuits. The session begins with a step-by-step guide to setting up the Qiskit development environment and an overview of the IBM Quantum platform. Participants will then learn the basics of quantum circuit construction, including how to incorporate classical feedforward mechanisms and control flow to enhance circuit functionality.

■ HOST: Junggi Yoon (junggi.yoon@apctp.org)

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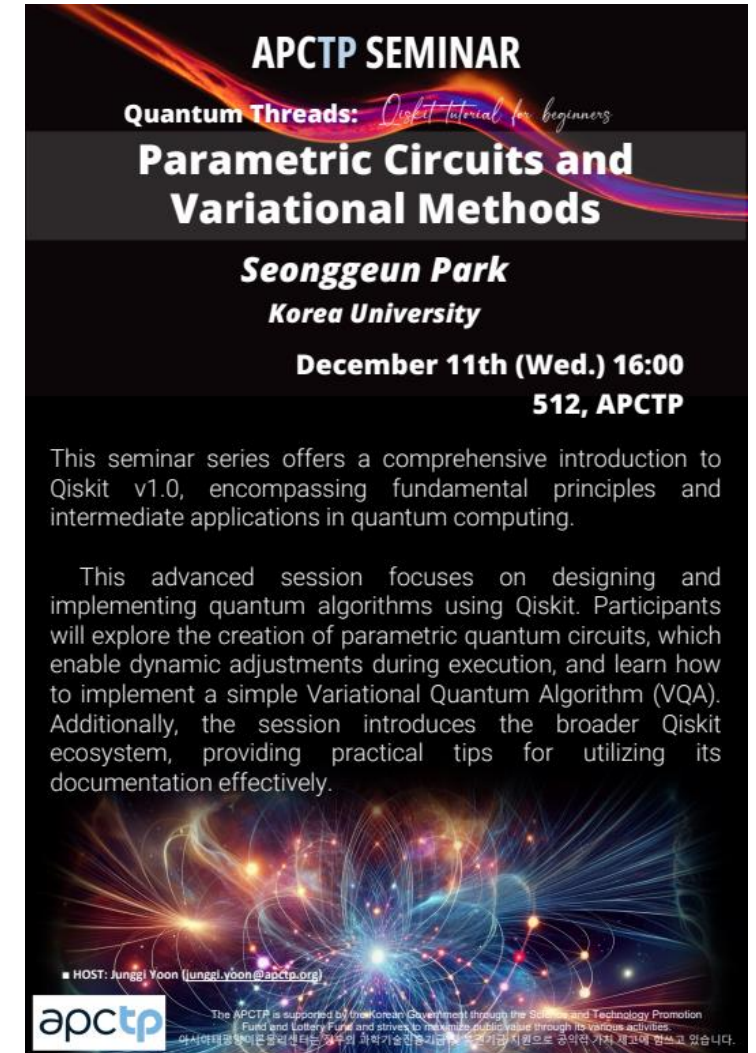
This seminar series offers a comprehensive introduction to Qiskit v1.0, encompassing fundamental principles and intermediate applications in quantum computing.

In the second session, participants will learn how to execute quantum circuits on real quantum hardware using Qiskit. The session covers key concepts such as Qiskit primitives, which simplify interactions with quantum systems, and the basics of the Qiskit transpiler for optimizing circuit performance. Through hands-on examples, attendees will explore the process of preparing circuits for execution and optimizing them for efficient results.

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Parametric Circuits and Variational Methods
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This seminar series offers a comprehensive introduction to Qiskit v1.0, encompassing fundamental principles and intermediate applications in quantum computing.

This advanced session focuses on designing and implementing quantum algorithms using Qiskit. Participants will explore the creation of parametric quantum circuits, which enable dynamic adjustments during execution, and learn how to implement a simple Variational Quantum Algorithm (VQA). Additionally, the session introduces the broader Qiskit ecosystem, providing practical tips for utilizing its documentation effectively.

■ HOST: Junggi Yoon (junggi.yoon@apctp.org)

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- Designing Quantum Circuits
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- Exploring Qiskit Runtime Service
- Executing Quantum Circuits using Qiskit Primitives
- Transpiling Quantum Circuits

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