Demystifying Quantum Computing: A Practical Introduction

Workshop date: July 10, 2025, 12:25-13:15
Venue: 26th International Conference on Computer Methods in Mechanics, Łódź, Poland, **Institute of Physics, Lodz University of Technology, ul. Wólczańska 217/221, 93-005 Łódź**

Abstract: This tutorial provides a grounded introduction to the fundamentals of quantum computation and simulation. Avoiding vague explanations and focusing on clarity, we will explore core concepts in a concrete and accessible manner. The session is designed to be understandable to participants from diverse backgrounds, regardless of prior experience. Special attention will be given to practical applications of quantum computing—particularly in the field of mechanics. We will also present educational resources developed by PSNC and outline concrete steps for applying quantum methods to contemporary scientific and engineering challenges.

Agenda:

12:25 – 12:50 — Introduction to Quantum Computing   dr inż. Tomasz Pecyna
A foundational overview of quantum computation and simulation, presented in an accessible and practical way.

12:50 – 13:05 — Showcase of Applications   inż. Dawid Siera
Presentation of current and emerging applications of quantum computing, with emphasis on mechanics and related fields.

13:05 – 13:15 — Next Steps and Educational Resources   dr inż Tomasz Pecyna
Guidance on how to continue learning, including materials developed by PSNC and strategies for applying quantum methods in practice.