

# NOISY QUANTUM COMPUTERS IN COMPLEX SYSTEMS RESEARCH

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Quantum computers (QC) in recent years have gained a great surge of technological advancement, yet to this day their notorious "noisiness" has stalled their full incorporation into studies concerning complex systems. In this talk by presenting our new framework for Transition Path Sampling (TPS), a Monte Carlo based method for capturing rare events in complex systems, I aim to demonstrate how we could utilize these machines to our advantage even in the era of "NISQ" devices. In particular, by integrating Artificial Intelligence, QC, and Molecular Dynamics, our framework has been successful in tackling outstanding problems which fundamentally limited the application of previous formulations of TPS onto complex biomolecular transitions. Finally, I will present our latest result where by further refining our approach, we were able to sample unfolding pathways of a protein that previously required the specialized supercomputer ANTON in order to observe near native state re-arrangements.

**General information:**

The seminar will be held at ECT\*, Villa Tambosi, Strada delle Tabarelle 286, Villazzano. We are going to have an aperitif in the terrace of the villa!

**To reach Villa Tambosi:** take bus number 13 from Povo (one leaves around 15) or bus number 6 from the city center. The bus stops is in front of the Villa.

In order to organize the aperitif we kindly ask you to confirm your presence through the google form that you can find scanning the following QR code:



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