



QUANTERA

ERA-NET Cofund in Quantum Technologies

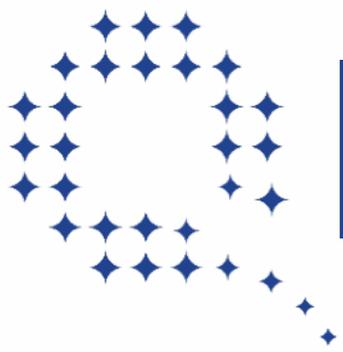
QuantERA Mid-term Strategic Conference Granada - 13.11.2019

Theory-Blind Quantum Control : TheBlinQC

Florian Mintert

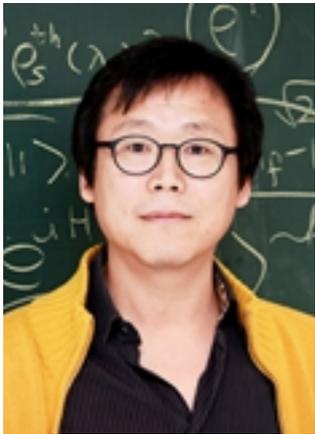
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The consortium

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Gerard Milburn



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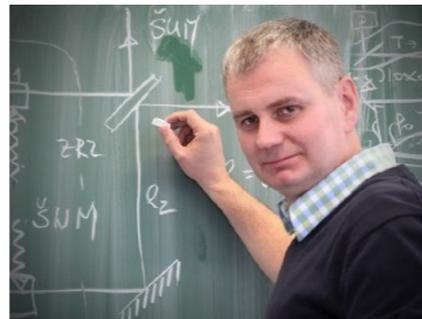
Daniel Burgarth



Markus Aspelmeyer

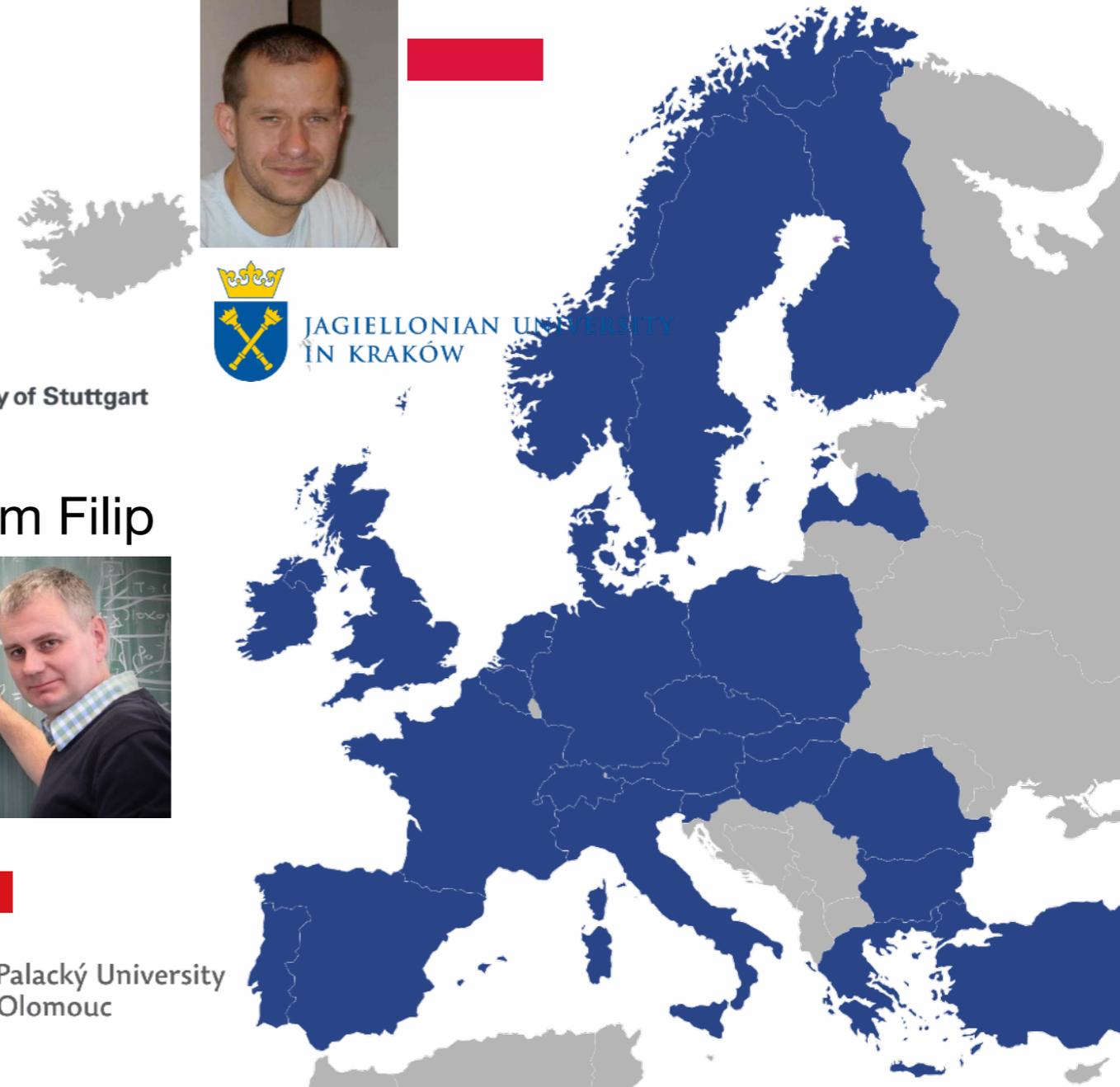


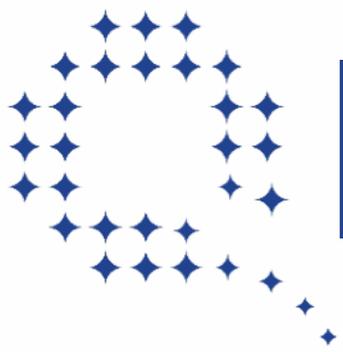
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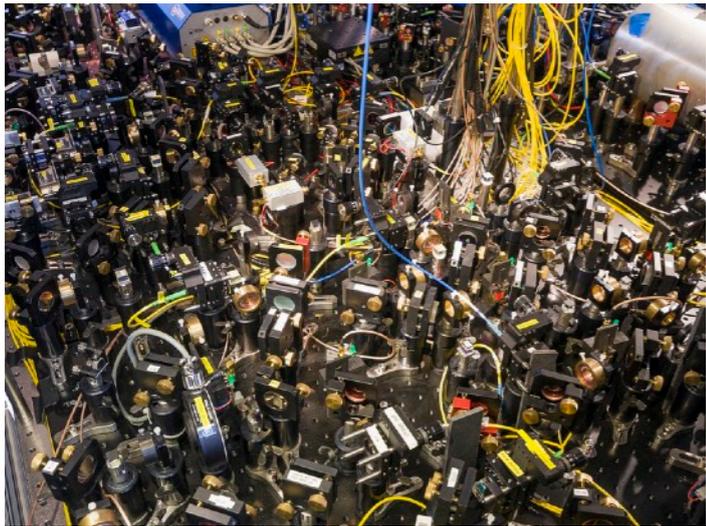
José Manuel Leitão
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Theory-Blind Quantum Control

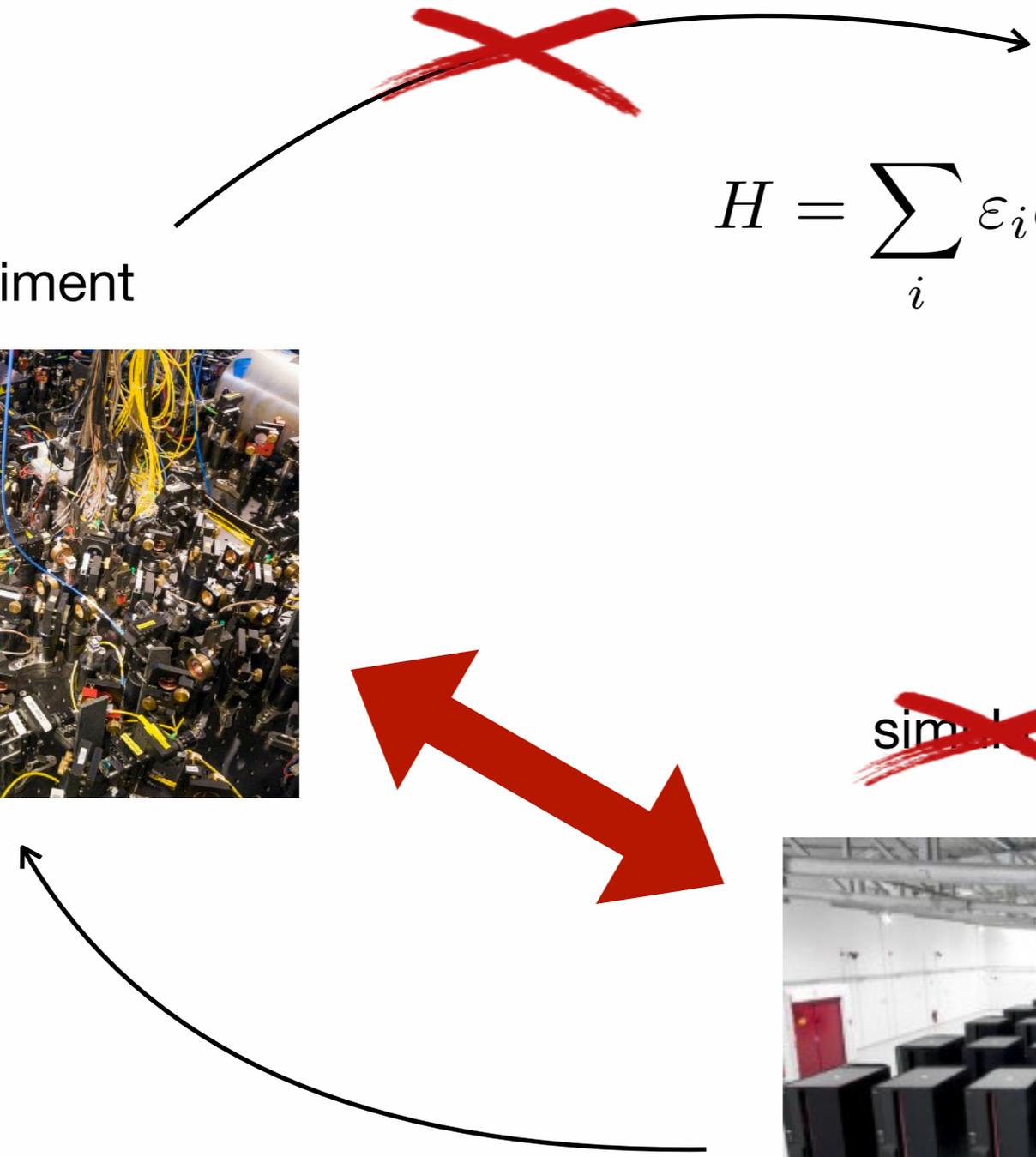
experiment



model

$$H = \sum_i \epsilon_i a_i^\dagger a_i + \sum u_{ijqp} a_i^\dagger a_j^\dagger a_p a_q$$

~~simulation & optimisation~~

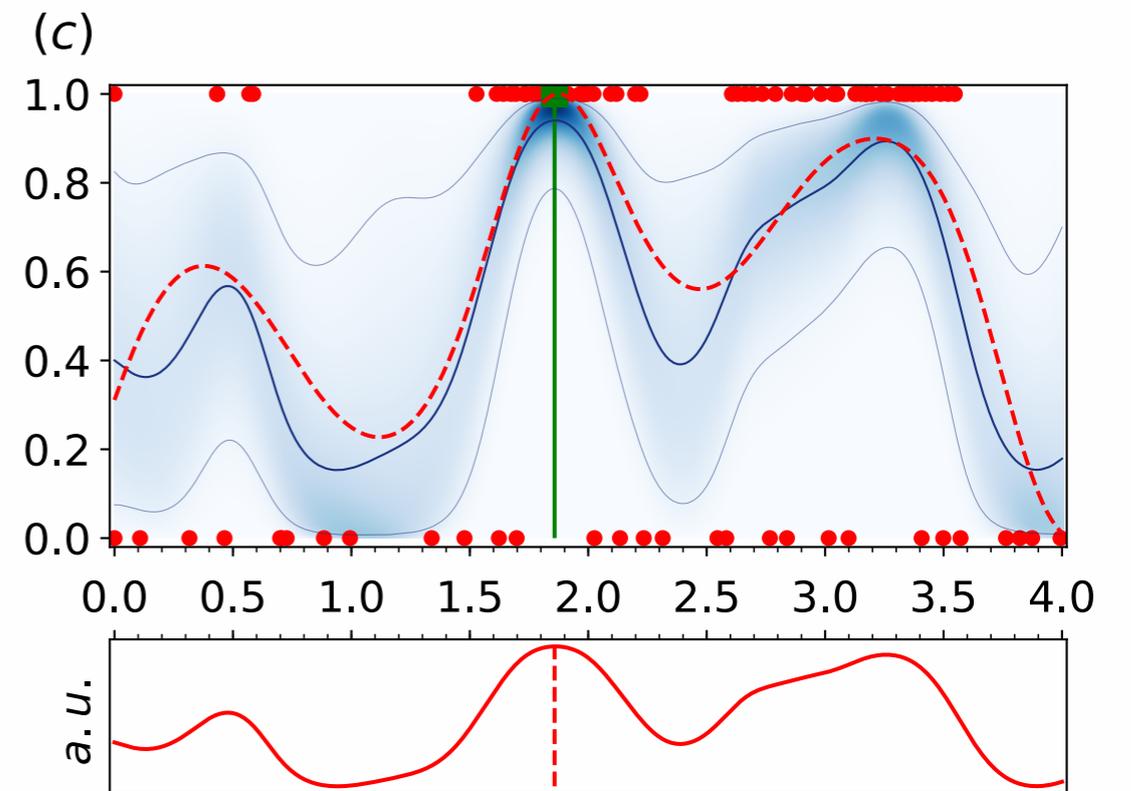
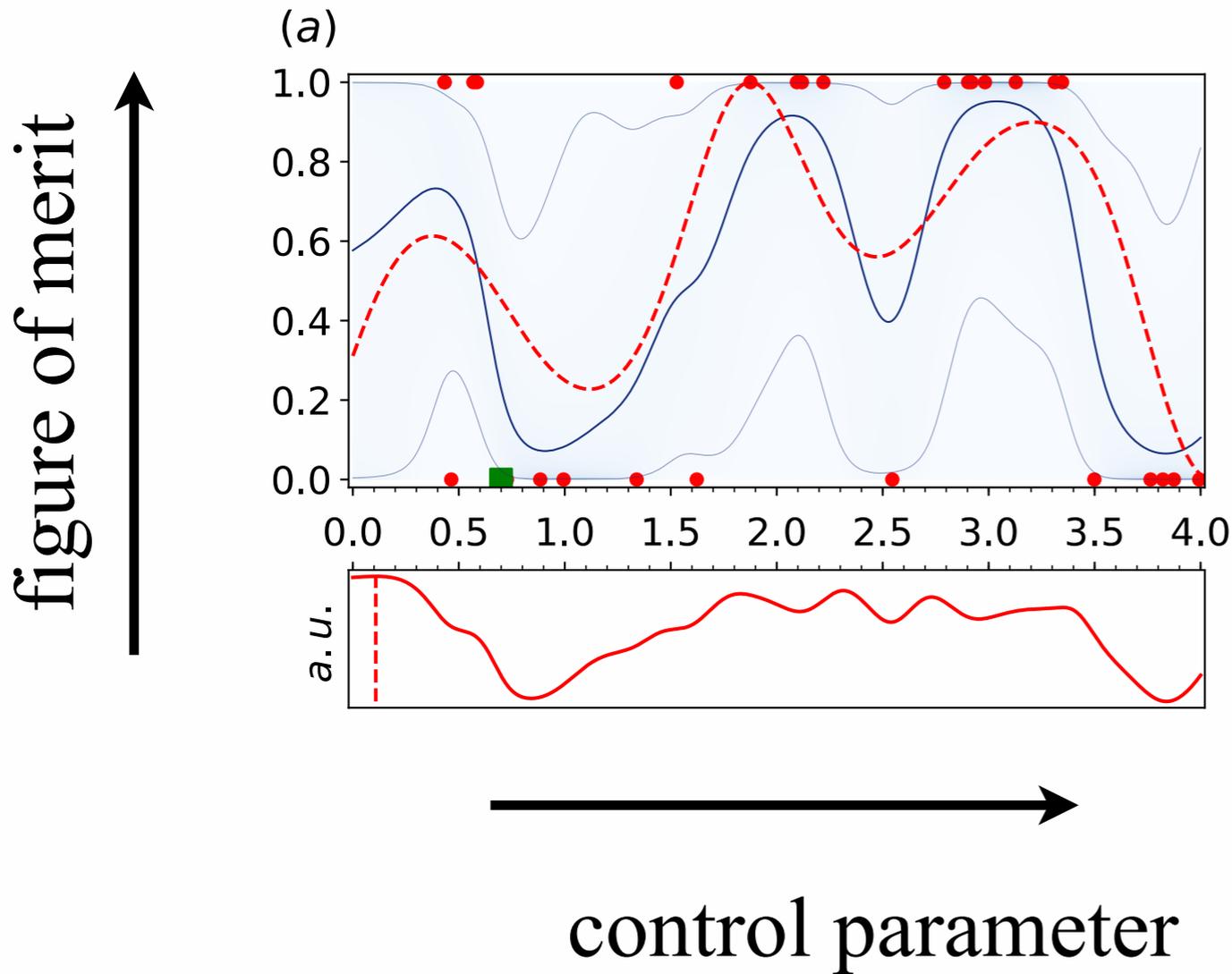




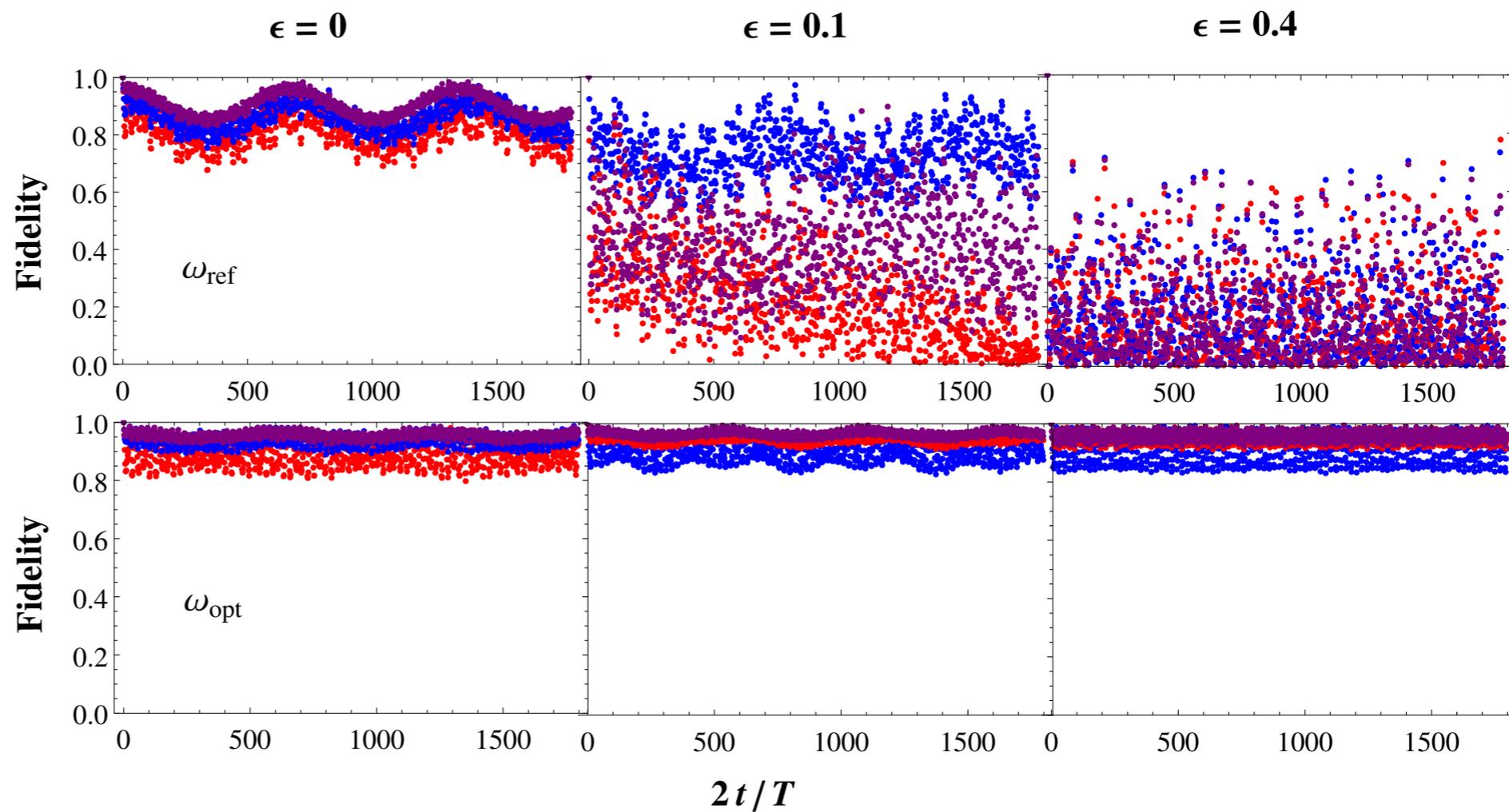
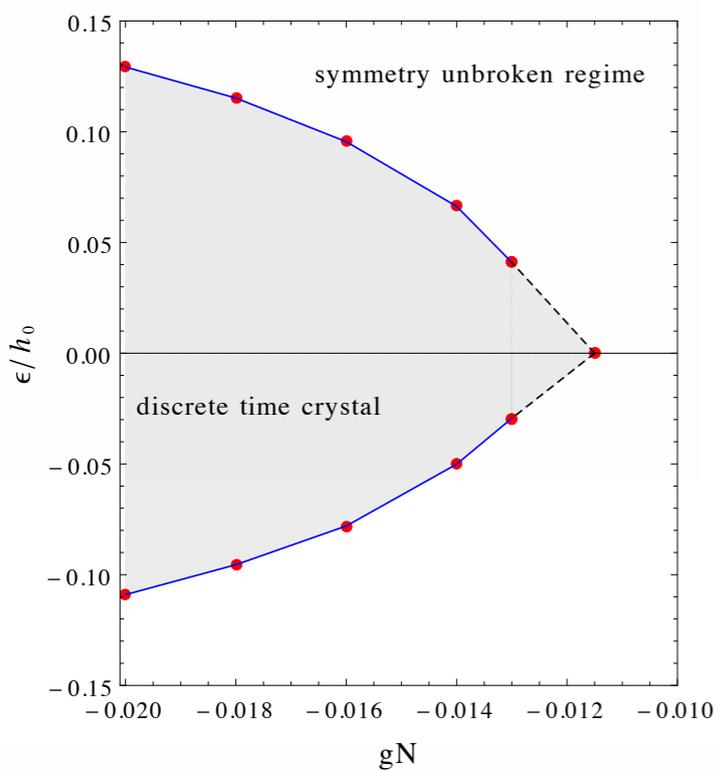
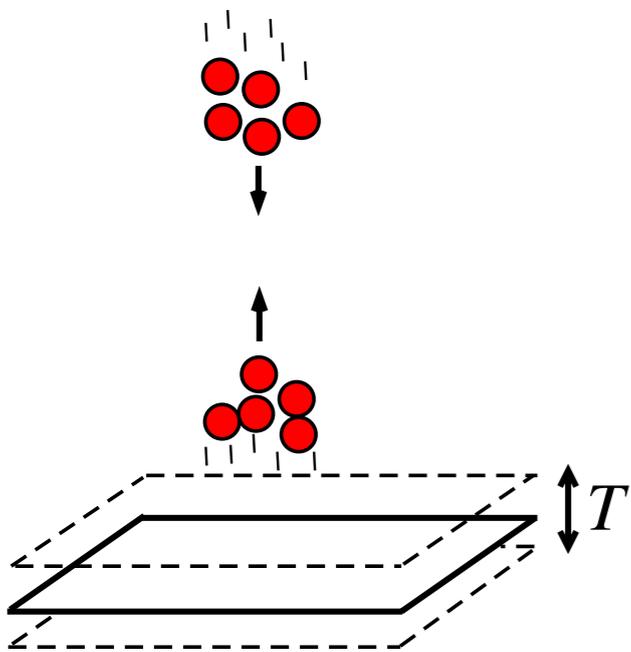
Control with poor statistics

30 steps

100 steps



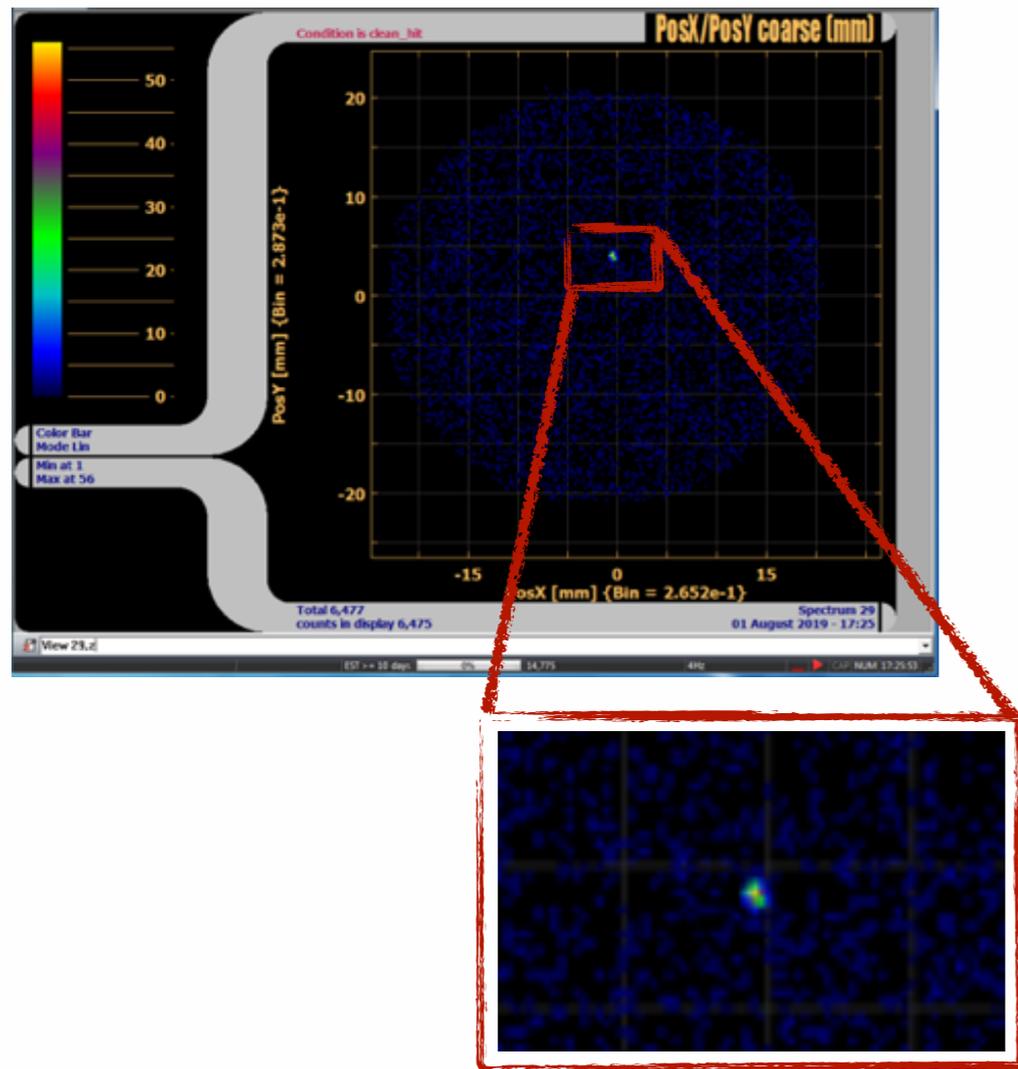
Simulated experiments : time crystals



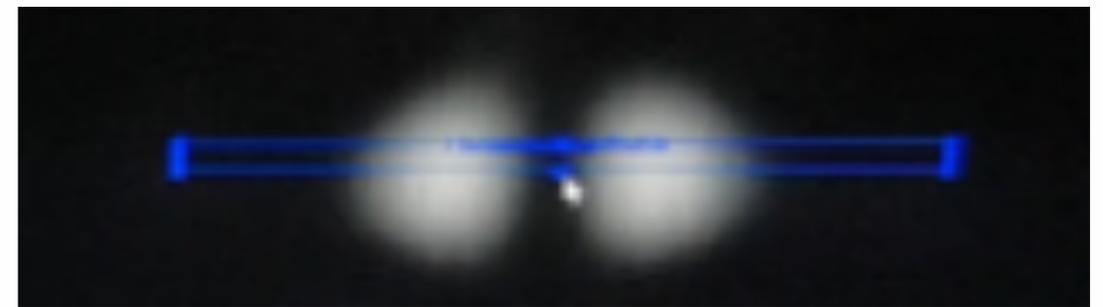


Experiments

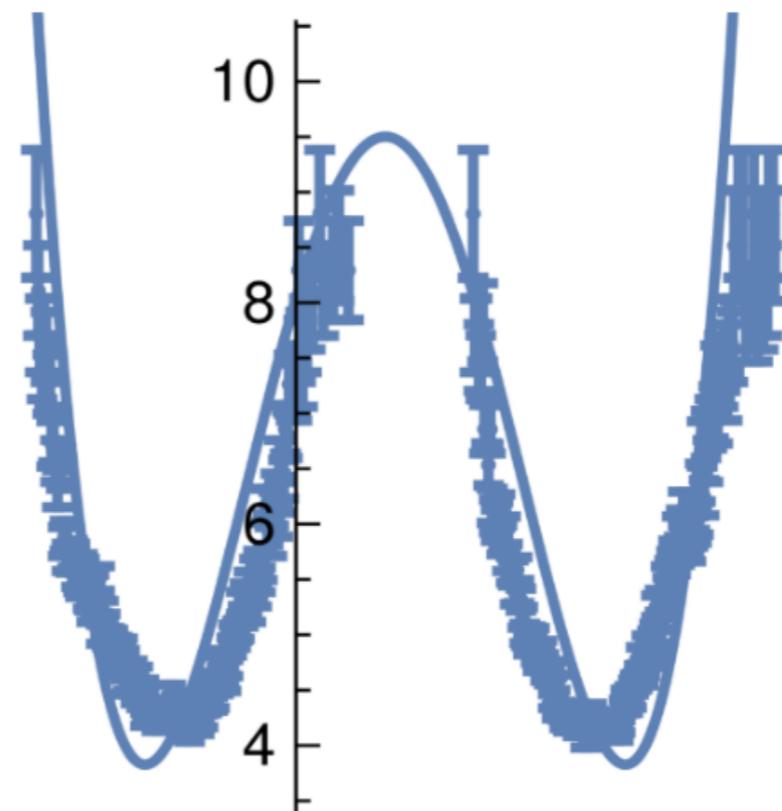
Rydberg crystal in Stuttgart



levitated nano-sphere in Vienna



Potential (kT)





The status

theory developed and
tested in simulations

control in experiment :

optical double-well potential

cooling of nano-sphere

circular Rydberg states

Rydberg crystals

TheBlinQC.org

