

The Vienna Center for Quantum Science and Technology  
(VCQ) invites you to a

## COLLOQUIUM TALK

by

**Andreas Nunnenkamp**

*(University of Vienna)*

### *Novel Platforms for Quantum Science and Technology*

The 'second quantum revolution' aims at exploiting coherence for novel technologies that will likely involve electromagnetic, mechanical, atomic, and topological degrees of freedom. Directional amplifiers, that amplify signals depending on the propagation direction, have recently attracted much attention, also for applications in quantum technologies. Here, I will present a unifying framework based on topology to understand non-reciprocity and directional amplification in driven-dissipative cavity arrays. Specifically, I will discuss a one-to-one correspondence between a non-zero topological invariant defined on the spectrum of the dynamic matrix and regimes of directional amplification, in which the end-to-end gain grows exponentially with the number of cavities. Time-permitting, I will give a brief overview on our work on higher-order and fractional discrete time crystals in quantum and classical spin arrays.

**Monday, 21<sup>st</sup> March 2022,**  
**17:15 get-together with coffee and snacks**

Main Lecture Hall at TU Wien, Atominstitut, Stadionallee 2, 1020 Vienna

The seminar talk will be preceded by a VCQ Student talk at 17:45 by

**Miguel Gallego Ballester**  
*University of Vienna*

**"Macroscopically nonlocal quantum correlations"**

**Host: Markus Aspelmeyer**

for further information please visit  
[vcq.quantum.at/colloquium-ss-22](https://vcq.quantum.at/colloquium-ss-22)