

# Conference themes and program

FNS2023 will include 6 themes each hosting a number of invited and/or contributed talks.

Quantum resonators (9 talks)	Phase, symmetry, and topology (5 talks)	Nonlinear dynamics (6 talks)	Fluctuations and dissipation (4 talks)	Sensing and control(6 talks)	Phonons, solitons, and excitons (8 talks)
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## Tuesday June 6, 2023

8:15-9:00	Registration & coffee	
9:00-9:15	Welcome words	Local organizers
9:15-9:50	<i>Topological solitons in the arrays of nanomechanical parametric resonators</i> Hiroshi Yamaguchi (NTT, Japan)	Chair: Herre van der Zant
9:55-10:30	<i>In-equilibrium thermodynamics of a mesoscopic mechanical object:towards the quantum ground-state</i> Eddy Collin (Grenoble, France)	
10:30-11:00	Coffee break	
11:00-11:25	<i>Boosting the nonlinearity of mechanical resonators approaching the quantum regime</i> Adrian Bachtold (ICFO, Spain)	Chair: Eva Weig
11:30-11:55	<i>Emergent phenomena in driven nonlinear quantum resonators</i> Gary Steele (TUD, Netherlands)	
12:00-12:15	Sponsor pitch	
12:20-13:20	Lunch	
13:20-13:55	<i>Quantum state preparation and tomography of entangled mechanical resonators</i> Amir Safavi-Naeini (Stanford, USA)	Chair: Simon Gröblacher
14:00-14:35	<i>Topologically-imposed vacancies and mobile solid <math>^3\text{He}</math> on carbon nanotube nanomechanical resonator</i> Pertti Hakonen (Aalto, Finland)	
14:40-15:15	<i>Optomechanical meta-matter: Nonreciprocity and topology in synthetic nanomechanical networks</i> Ewold Verhagen (AMOLF, Netherlands)	
15:15-15:45	Coffee break	
15:45-16:10	<i>Nonlinear dynamics and fluctuations in micronscale membrane resonators</i> Elke Scheer (University of Konstanz, Germany)	Chair: Daniel Lopez
16:15-16:40	<i>Cavity acousto-mechanics: A platform for linear and nonlinear dynamics</i> Samer Hourri (IMEC, Belgium)	
17:00-19:00	Poster presentations & welcome reception	
19:00	Bus transport	

**Wednesday June 7, 2023**

8:15- 8:30	Welcome coffee	
8:30-8:55	<i>Ultralow dissipation mechanical resonators for quantum optomechanics</i> Amirali Arabmoheghi (EPFL, Switzerland)	Chair: Yaroslav Blanter
9:00-9:25	<i>Nanomechanical qubit and non-linearities</i> Fabio Pistoiesi (Université de Bordeaux, France)	
9:30-9:55	<i>Coherent feedback cooling of a nanomechanical membrane with atomic spins</i> Gianluca Schmid (Basel, Switzerland)	
9:55-10:25	Coffee break	
10:25-11:00	<i>Phonon engineering of TLS defects in superconducting quantum circuits</i> Oskar Painter (Caltech, USA)	Chair: Albert Schliesser
11:05-11:30	<i>Optomechanical interactions enriched by excited carriers</i> Ivan Favero (Université de Paris, France)	
11:35-12:00	<i>Surface acoustic wave transduction of nanomechanical pillar resonators</i> Silvan Schmid (TU Wien, Austria)	
12:05-12:25	Sponsor pitches	
12:30- 13:30	Lunch	
13:30-14:05	<i>Transient time symmetry breaking in driven oscillators</i> Mark Dykman (Michigan State University, USA)	Chair: Fabio Pistoiesi
14:10-14:45	<i>Phase transitions &amp; exotic states in an array of driven nonlinear quantum oscillators: insights from an exact solution</i> Aash Clerk (University of Chicago, USA)	
14:45-15:15	Coffee break	
15:15-15:50	<i>Optomechanical scanning force microscopy with high-Q resonators</i> Alex Eichler (ETH, Switzerland)	Chair: Ho Bun Chan
15:55-16:20	<i>Measuring radiation torque shot noise and full potential control of a levitated nano-dumbbell</i> Fons van der Laan (AMOLF, Netherlands)	
16:25-16:50	<i>Nanomechanical resonator frequency measurement and fundamental lower limits of frequency uncertainty</i> Vladimir Aksyuk (NIST, USA)	
17:00-19:00	Poster presentations & drinks	
19:00	Bus transport	

Thursday June 8, 2023		
8:15-8:30	Welcome coffee	
8:30-8:55	<i>Phononic waveguides as coherent phonon sources</i> Clivia Sotomayor Torres (ICN2, Spain)	Chair: Peter Steeneken
9:00-9:25	<i>Controlling excitons in strained 2D semiconductors</i> Kiril Bolotin ( Freie University Berlin, Germany)	
9:30-9:55	<i>Tension tuning of sound and heat transport in graphene</i> Gerard Verbiest (TUD, Netherlands)	
9:55-10:25	Coffee break	
10:25-11:00	<i>Controlled dynamics of a levitated nanoparticle in a hybrid optical/RF integrated trapping platform</i> Romain Quidant (ETH, Switzerland)	Chair: Kamil Ekinci
11:05-11:30	<i>Kinetic-inductive mechano-electric coupling</i> David Haviland (KTH, Sweden)	
11:35-12:00	<i>Cavity optomechanical liquid prober using a twin-microbottle resonator</i> Motoki Asano (NTT, Japan)	
12:05-12:25	Sponsor pitches	
12:30- 13:30	Lunch	
13:30-14:05	<i>Period-tripled oscillations in electromechanical resonators</i> Ho Bun Chan (HKUST, China)	Chair: Adrian Bachtold
14:10-14:45	<i>Magneto-mechanics and nonlinear dynamics of 2D antiferromagnetic membranes</i> Makar Šiškins (NUS, Singapore)	
14:45-15:15	Coffee break	
15:15-15:50	<i>Building nanoscale engines with fully suspended carbon nanotubes</i> Natalia Ares (University of Oxford, UK)	Chair: Raphael St-Gelais
15:55-16:20	<i>Detection of Brownian motion via a quantum dot coupled to a highly miniaturized mechanical resonator</i> Clemens Spinnler (Basel, Switzerland)	
17:00	Bus transport from Art Centre to Madurodam	
18-19:30	Madurodam park visit & welcome drinks	
19:30- 21:30	Dinner	
21:30	Bus transport	

Friday June 9, 2023		
8:45-9:00	Welcome coffee	
9:00-9:25	<i>Engineering the speedup of quantum tunneling via dissipation</i> Gianluca Rastelli (University of Trento, Italy)	Chair: Clivia Sotomayor Torres
9:30-9:55	<i>Thermal fluctuations of a nanomechanical beam resonator in a viscous fluid</i> Kamil Ekinici (Boston University, USA)	
10-10:30	Coffee break	
10:35-11:00	<i>Inducing micromechanical motion by optical excitation of a single quantum dot</i> Pierre Verlot (Université Paris-Saclay, France)	Chair: Hiroshi Yamaguchi
11:05-11:40	<i>Quantum control of phononic membrane resonators: from milikelvin to room temperature</i> Albert Schliesser (Copenhagen University, Denmark)	
11:45-12:10	Sponsor pitches	
12:15-13:15	Lunch	
13:15-13:50	<i>High-Q spiderweb nanomechanics inspired by machine learning</i> Richard Norte (TUD, Netherlands)	Chair: Robert Blick
13:55-14:20	<i>Relaxation and dynamics of predisplaced silicon nitride strings</i> Menno Poot (TUM, Germany)	
14:20-14:50	Coffee break	
14:50-15:15	<i>Spontaneous parametric down-conversion in MEMS micro mirrors</i> Peter Degenfeld-Schonburg (Bosch GmbH, Germany)	Chair: Silvan Schmid
15:20-15:55	<i>Can a single nanomechanical mode generate a frequency comb?</i> Eva Weig (TUM, Germany)	
16:00-16:30	Closing words & poster awards	Local organizers & FNS committee
17:00	Bus transport	