



The man-powered machine learning

Linear Optomechanics

- Displacement detection
- Optical Spring
- Cooling & Amplification
- Two-tone drive: "Optomechanically induced transparency"
- Ground state cooling
- State transfer, pulsed operation
- Wavelength conversion
- Radiation Pressure Shot Noise
- Squeezing of Light
- Squeezing of Mechanics
- Light-Mechanics Entanglement
- Accelerometers
- Single-quadrature detection, Wigner density
- Optomechanics with an active medium
- Measure gravity or other small forces
- Mechanics-Mechanics entanglement
- Pulsed measurement
- Quantum Feedback
- Rotational Optomechanics

Multimode

- Mechanical information processing
- Bandstructure in arrays
- Synchronization/patterns in arrays
- Transport & pulses in arrays

Nonlinear Optomechanics

- Self-induced mechanical oscillations
- Attractor diagram?
- Synchronization of oscillations
- Chaos

○ White: yet unknown challenges/goals

Nonlinear Quantum Optomechanics

- QND Phonon number detection
- Phonon shot noise
- Photon blockade
- Optomechanical "which-way" experiment
- Nonclassical mechanical q. states
- Nonlinear OMIT
- Noncl. via Conditional Detection
- Single-photon sources
- Coupling to other two-level systems
- Optomechanical Matter-Wave Interferometry





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<https://zenodo.org/communities/lpd-nanophotonics/>

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