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Electro-optomechanical nanomembrane arrays

Nano electro-optomechanical (NEMO) systems consisting in high-quality mechanical resonators interacting with electrical and optical fields are widely used in sensing and photonics applications. We investigate such a NEMO formed by a pair of suspended, ultrathin silicon nitride membranes. By piezoelectrically controlling the membranes' tensile stress we demonstrate tuning of their vibrational mode spectrum, strong intermode electromechanical coupling as well as enhancement of their nonlinear response.

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