

Abstract Submitted  
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**Probing charge density wave transition at the nanoscale in NbSe<sub>2</sub> using NEMS resonators** SHAMASHIS SENGUPTA, HARI SOLANKI, VIBHOR SINGH, SAJAL DHARA, MANDAR DESHMUKH, Tata Institute, Mumbai, India — We study nanoelectromechanical (NEMS) resonators fabricated from suspended flakes of NbSe<sub>2</sub> (thickness  $\sim$  30–50 nm) to probe charge density wave (CDW) physics at nanoscale. Variation in elastic and electronic properties accompanying the CDW phase transition (around 30 K) are investigated simultaneously using the devices as self-sensing heterodyne mixers. Elastic modulus is observed to change by 10%, an amount significantly larger than what had been reported earlier in the case of bulk crystals. We also study the modulation of conductance by electric field effect, and examine its relation to the order parameter and the CDW energy gap at the Fermi surface.

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