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Direct Measurement of Strain-induced Changes in Carbon Nanotube Bandstructure MINGYUAN HUANG, Columbia University, YANG WU, BHUPESH CHANDRA, YUYAO SHAN, TONY HEINZ, JAMES HONE, Columbia University — The transition energies of single-walled carbon nanotubes under uniaxial strain were measured by Rayleigh scattering spectroscopy. The transitions display significant strain-induced shifts, as predicted by theory. In semiconducting tubes, successive transitions shift in opposite directions. In chiral metals, the split peaks merge with strain. We also observe small, but measurable shifts in the transitions of armchair tubes. The behavior is qualitatively consistent with theoretical predictions based on the trigonal warping effect in nanotube bandstructure.

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