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Electronic and optical properties of single-walled GaN nanotubes from first principles SOHRAB ISMAIL-BEIGI, Yale University — There is current experimental interest in fabricating GaN nanotubes for possible optoelectronics/luminescence applications. To date, *ab initio* studies of these potentially interesting systems have used ground-state density functional theory which has well-known shortcomings when used to predict electronic excitations. We report on our *ab initio* predictions of the electronic and optical properties of single- walled GaN nanotubes using electronic Green's functions within the GW-Bethe Salpeter Equation formalism. We present results the nanotube band structures, optical spectra, excitonic states, and likely luminescence properties.

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