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Surface Electromagnetic Phenomena in Pristine and Doped Car**bon Nanotubes**¹ IGOR BONDAREV, North Carolina Central University — Recent theoretical effort towards understanding the near-field optoelectronic properties of pristine and atomically doped carbon nanotubes will be reviewed. The research is motivated by the need for the development of materials that may host quantum coherent states with long coherence lifetimes [1]. A variety of electromagnetic phenomena, such as atomic spontaneous decay dynamics [2] and atom-nanotube van der Waals coupling[3], light absorption [4,6] and entanglement of atomic states [5,6] close to carbon nanotubes, exciton-plasmon interactions on the nanotube surface [7], as well as their potential applications in modern nanophotonics and optoelectronics, will be discussed. [1] T.Brandes, Phys. Rep. 408, 315 (2005). [2] I.V.Bondarev, Ph.Lambin, Phys. Rev. B 70, 035407 (2004). [3] I.V.Bondarev, Ph.Lambin, Phys. Rev. B 72, 035451 (2005). [4] I.V.Bondarev, B.Vlahovic, Phys. Rev. B 74, 073401 (2006). [5] I.V.Bondarev, B.Vlahovic, Phys. Rev. B 75, 033402 (2007). [6] I.V.Bondarev, Journal of Electronic Materials, in print. [7] I.V.Bondarev, H.Qasmi, Physica E, in print.

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