Charge dynamics of fullerenes and nanotubes

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The investigation of the optical properties is a powerful experimental tool in order to achieve the dynamics of the charge excitation spectrum in condensed matter. In my talk I will review our optical experiments performed over a broad spectral range (i.e., from the far-infrared to the ultra- violet) as a function of temperature on a variety of fullerene compounds and (carbon) nanotube films. I will particularly address issues associated with the onset of various phase transitions, like superconductivity and spin- density-wave, as well as with the dimensionality crossover. Emphasis will be devoted to the role played by the one-dimensional electronic structure in nanotube systems, specifically discussing the possibility of a transition from the Fermi-liquid towards the Luttinger liquid.