

# ELECTRONIC STRUCTURE AND PARITY EFFECTS IN CORRELATED NANOSYSTEMS

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We discuss the spectral, transport and magnetic properties of quantum nanowires composed of single atoms and containing either even or odd numbers  $N \leq 13$  of valence electrons. In our approach we combine **Exact Diagonalization** and **Ab Initio** calculations (EDABI method [1]). The analysis is performed as a function of the interatomic distance. The momentum distribution differs drastically for those obtained for even  $N$  with those for odd  $N$ , whereas the Drude weight of the optical conductivity evolves smoothly. An appearance of magnetic, Slater-type splitting in electronic structure is demonstrated and explained [2]. A nontrivial role of boundary conditions is stressed.

[1] J. Spalek et al., Phys. Rev. B **61**, 15676 (2000); A. Rycerz and J. Spalek, *ibid.* **65**, 035110 (2002).

[2] A. Rycerz and J. Spalek, Eur. Phys. J. B **40**, 153 (2004).

13.4 cm

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9.7 cm