

Abstracta

Ano II - N. 01

Jan-98



Trabalhos Aceitos para Publicação

A001-99 à A004-99

A 001-98 Markovian Kinetic Equations in a Nonequilibrium Statistical Ensemble Formalism.

J. R. Madureira, A. R. Vasconcellos, R. Luzzi and L. Lauck.

The nonlinear quantum kinetic theory for many-body systems either near or far-from equilibrium, that a nonequilibrium ensemble formalism provides, is revisited. In this communication we consider an important limit of such transport equations, consisting of the memoryless approximation, which leads to the sometimes-called Markovian kinetic equations. They are derived in Zubarev's approach to the method, and next applied to a particular model of a spin system in interaction with a thermal bath of lattice vibrations. The limitations of the approach, as well as some criticism it has received, are discussed.

Physical Review E 57 (3), 3637-3640, Mar 1998

A 002-98 Characteristic Losses in Metals:Al, Be and Ni.

H. H. Madden, R. Landers, G. G. Kleiman and D. M. Zehner.

Information about the occupied portion of the surface density of states of materials can be derived from electron-excited Auger Electron Spectroscopy (AES), which is a standard experimental technique in most surface science laboratories. Surface sensitive experimental techniques that provide information regarding the unoccupied portion of the surface density of states are often not standard and are not so readily available. Here we explore the possibility of utilizing the same experimental equipment as in AES derive information about the unoccupied portion of the surface density of states from a characteristic loss spectroscopy, in particular, from Core-level Inelastic Electron Scattering Spectroscopy (CLIESS). An important application of this technique is in comparative studies. CLIESS spectra from clean surfaces of aluminum, beryllium and nickel are presented. These data were taken in the first-derivative mode using the reflection of monoenergetic primary beams of 450 eV energy for Be, and 300 eV for Al and Ni. The Al and Be spectra had to be extracted from overlapping plasmon signals using synthesized plasmon spectra based on the behavior of these spectra between the elastic peak energy and the respective core level threshold energies. After applying loss deconvolution techniques to remove secondary loss spectral distortions, integral spectra were obtained which compared well to corresponding experimental soft x-ray absorption and transmission electron-energy loss data as well as to theoretical calculations of the unoccupied density-of-states for these materials. Comparison similarities as well as some differences are discussed. Finally, in order to illustrate the potential these signals have in serving as "fingerprints" of surface chemistry, derivative metal-CLIESS curves for the three oxide surfaces of the metals are also presented.

Journal of Vacuum Science and Technology A 16 (4), 2595-2603, Jul 1998

A 003-98 The Cumulant Expansion for the Anderson Lattice With Finite U: The completeness Problem.

M. E. Foglio, M. S. Figueira.

"Completeness" (i.e probability conservation) is not usually satisfied in the cumulant expansion of the Anderson lattice when a reduced state space is employed for $U \otimes Y$. To understand this result, the well known "Chain" approximation is first calculated for finite U , followed by taking $U \otimes Y$. Completeness is recovered by this procedure, but this result hides a serious inconsistency that causes completeness failure in the reduced space calculation. Completeness is satisfied and the inconsistency is removed by choosing an adequate family of diagrams. The main result of this work is that using a reduced space of relevant states is as good as using the whole space.

International Journal of Modern Physics B 12 (07-08), 837-859, 1998

A 004-98 L123M45M45 Auger Satellites of the 4d Metals: Shake-up or Coster-Kroning?

R. Landers, A. Siervo, S. G. C. de Castro and G. G. Kleiman.

Interpretation of the satellites of the Cu L_{2,3}M_{4,5}M_{4,5} Auger spectrum has involved considerable controversy in recent years. Reaching unambiguous conclusions is impeded by the contribution of Coster-Kroning (CK) transitions, requiring considerable experimental investigation before clarifying the relative roles of shake-up and CK processes. The L_{2,3}M_{4,5}M_{4,5} spectra of Ag, Pd and Rh excited by bremsstrahlung also have satellite features and manifest experimental systematics consistent with 4d spectator vacancies produced by shake-up. The contribution of CK processes in the formation of these satellites, which, in this case, should have to involve the L₁ level, is consistent with theoretical predictions, however. A direct determination of the role of CK processes is necessary, therefore, to resolve this issue. One possibility would be to measure the L₁M_{4,5}M_{4,5} spectrum directly: were CK processes dominant, the spectrum should manifest no satellite. Direct measurement is difficult with bremsstrahlung excitation, however, because of transition's low intensity. We report measurements of this spectrum in Ag, Pd and Rh and in Pd-Ag alloys using a Ti anode and demonstrate the presence of a satellite which is consistent in energy position and relative intensity with those of the L_{2,3}M_{4,5} satellites. This result supports the interpretation of these satellites as shake-up in nature.

Journal of Electron Spectroscopy and Related Phenomena 93 (1), 221-225, Jun 1998

Abstracta

Instituto de Física

Diretor: Prof. Eliermes Arraes Meneses

Universidade Estadual de Campinas - UNICAMP

Cidade Universitária Zeferino Vaz

CEP: 13083-859 - Campinas - SP - Brasil

e-mail: secdir@ifi.unicamp.br

Fone: 0XX 19 3521 - 5300

Publicação

Biblioteca do Instituto de Física Gleb Wataghin

<http://webbif.ifi.unicamp.br>

Diretora Técnica: Rita Aparecida Sponchiado

Elaboração

Tânia Macedo Folegatti

abstract@ifi.unicamp.br

Projeto Gráfico

ÍgneaDesign

Impressão

Gráfica Central - Unicamp