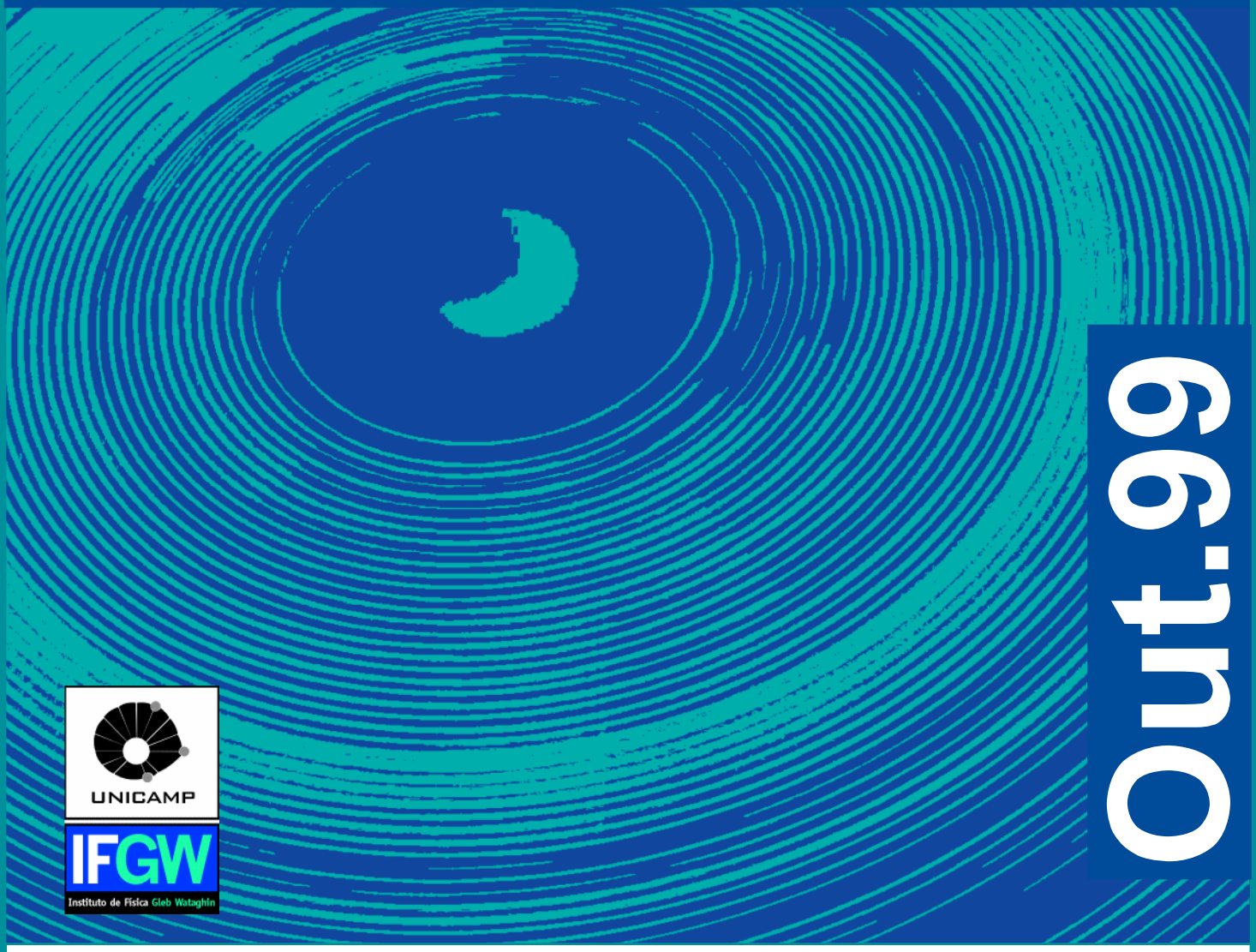
Abstracta

Ano III - N. 9



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Trabalhos Aceitos para Publicação em Periódicos

A052-99 à A057-99

Trabalhos Aceitos para Publicação em Conferências

C 005-99

Accepted papers for journal publication

[A052-99] "Periodic Anderson Model from the Atomic Limit and FeSi."

M. E. Foglio, M. S. Figueira

The exact Green's functions of the periodic Anderson model (PAM) for U ® ¥ are formally expressed within the cumulant expansion in terms of an effective cumulant. Here we resort to a calculation in which this quantity is approximated by the value it takes for the exactly soluble atomic limit of the same model. In the Kondo region a spectral density is obtained that shows near the Fermi surface a structure with the properties of the Kondo peak. Approximate expressions are obtained for the static conductivity s (T) and magnetic susceptibility X(T) of the PAM, and they are employed to fit the experimental values of FeSi, a compound that behaves like a Kondo insulator with both quantities vanishing rapidly for T ® 0. Assuming that the system is in the intermediate valence region, it was possible to find good agreement between theory and experiment for these two properties by employing the same set of parameters. It is shown that in the present model the hybridization is responsible for the relaxation mechanism of the conduction eletrons.

Physical Review B 62 (12), 7882-7891, 2000

[A053-99] "Scaling Violations: connections between elastic and inelastic hadron scattering in a geometrical approach."

P. C. Beggio , M. J. Menon, P. Valin

Starting from a short range expansion of the inelastic overlap function, capable of describing quite well the elastic pp and ` pp scattering data, we obtain extensions to the inelastic channel, through unitarity and an impact parameter approach. Based on geometrical arguments we infer some characteristics of the elementary hadronic process and this allows an excellent description of the inclusive multiplicity distributions in pp and ` pp collisions. With this approach we quantitatively correlate the violations of both geometrical and KNO scaling in an analytical way. The physical picture from both channels is that the geometrical evolution of the hadronic constituents is principally responsible for the energy dependence of the physical quantities rather than the dynamical (elementary) interaction it self.

Physical Review D 61, 034015, 2000

[A054-99] "Chaos in One-Dimensional Lattices Under Intense Laser Fields."

M. A. M. de Aguiar, H. S. Brandi, B. Koiller, E. R. Mucciolo

A model is investigated where a monochromatic, spatially homogeneous laser field interacts with an electron in a one-dimensional periodic lattice. The classical Hamiltonian is presented and the technique of stroboscopic maps is used to study the dynamical behavior of the model. The electron motion is found to be completely regular only for small field amplitudes, developing a larger chaotic region as the amplitude increases. The quantum counterpart of the classical Hamiltonian is derived. Exact numerical diagonalizations show the existence of universal, random-matrix fluctuations in the electronic energy bands dressed by the laser field. A detailed analysis of the classical phase space is compatible with the statistical spectral analysis of the quantum model. The application of this model to describe transport and optical absorption in semiconductor superlattices submitted to intense infrared laser radiation is proposed.

The European Physical Journal B - Condensed Matter and Complex Systems 14 (2), 329-335, 1999

[A055-99] "Superelastic collisions of electrons with the c 3P u metastable state in hydrogen dc positive column."

J. Amorim, J. L. S. Lino, J. Loureiro, M. A. P. Lima, F. J. da Paixão

We investigated the effect of superelastic electronic collisions of electrons, with the c3P u state of H2 molecule, on the electron energy distribution function (eedf) of a d.c. positive column. We use recently calculated set of electronic superelastic collision cross sections (Sartori C S et. al., 1997 Phys. Rev. A 55 3243) to study the effect of these collisions in the eedf, the transport parameters, ionization and dissociation rates. We include two possible pathways, c3P u® b3S u and c3P u ® X1S g , for superelastic collision of electrons with molecules in the metastable state. Cross sections of the order of 10-14 cm2 at low energy enhance the eedf tail by superelastic electronic collisions in particular for low reduced electric field E/N. This result changes considerably the dissociation and ionization rates by six orders of magnitude in the region from 10 to 50 Td.

Chemical Physics 246, 275-282, 1999

[A056-99] "Precipitation and Dissolution of Co Granules in CuCo Alloys: reverse effects of Joule heating."

F. C. S. da Silva, E. F. Ferrari, M. Knobel

Measurements of resistance R versus electrical current I were performed during annealing of melt-spum pure Cu and Cu90Co10 ribbons using linearly varying current Joule heating. Typical results of Cu90Co10 samples show three characteristic stages. For low applied currents (I < 4.0 A), a metallic behaviorr is observed and compared with pure Cu samples. Precipitation is the dominant process for intermediate currents (5.0A < I < 9.0 A). Re-solution of precipitated Co back to Cu matrix appears for high current values (I > 9.0A). Competition between precipitation and dissolution of Co granules depends also on the cooling rates, and we observed that it iss possible to freeze high temperature off-equilibrium configurations down to room temperature after an appropriate quenching. Experimental annealing conditions were simulated using Monte Carlo-Metropolis method, with Kawasaki dynamics of diffusing atoms, to study the kinetics of transformations in the Cu-Co system. Simulations show that precipitation and re-solution competition occurs as functions of both temperature and time. A relationship between simulated Co atoms configuration and resistance measurements is made.

Journal of Applied Physics 86 (12), 7170, 1999

[A057-99] "Optically Excited Paramagnetic Centers in Hydrogenated Amorphous Germanium."

F. C. Marques, M. M. de Lima Jr., P. C. Taylor

Optically excited paramagnetic centers in amorphous hydrogenated germanium (a-Ge:H) are reported. The light induced electron spin resonance (LESR) spectra are comprised of two components, which are ascribed to electrons and holes in the conduction- and valence-band-tail states, respectively. There is no evidence of spin pairing, charge defect creation or LESR of Ge dangling bonds. Over about three orders of magnitude in light intensity the decay curves are dispersive with a dispersive parameter of ~0.5. The spectra are best fit assuming bimolecular recombination. The LESR spin density depends only weakly on the photo-generation rate.

Journal of Non-Crystalline Solids 266-269 (2), 717-720, 2000

C 005-99 "Hadronic and Elementary Multiplicity Distributions in a Geometrical Approach."

P. C. Beggio, M. J. Menon, P. Valin.

We construct the hadronic multiplicity distribution in terms of an elementary distribution (at a given impact parameter) and the inelastic overlap function characterized by the observed BEL (Blacker-Edgier-Larger) behaviour. With suitable parametrizations for the elementary quantities, based on some geometrical arguments and the most recent data on e+ e- annihilation, an excellent description of pp and ` pp inelastic multiplicity distributions at the highest energies is obtained.

In: Proceedings of the VIII International Conference on Elastic and Diffractive Scaterring, Protvino, Russia, Set, 1999

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Abstracta

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