Abstracta

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Trabalhos Publicados

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Trabalhos Publicados

[P180-10] "A Review on Nanorobotics"

Neto, A. M. J. C., Lopes, I. A., and Pirota, K. R.

The goal of this review is to survey and identify accomplishments and advancements that have been made in the field of nanorobotics in point of experimental and theoretical views. It could determine which routes in the area of nanorobotics are scientifically plausible and technically useful. Also, we found recommendations to avoid possible problems and collateral effects in the future

[P181-10] "Absence of ferromagnetic order in high quality bulk Co-doped ZnO samples"

de Carvalho, H. B., de Godoy, M. P. F., Paes, R. W. D., Mir, M., de Zevallos, A. O., Iikawa, F., Brasil, M. J. S. P., et all

Bulk $Zn_{1-x}Co_xO$ samples were synthesized via standard solid-state reaction route with different Co molar concentrations up to 21%. A detailed microstructural analysis was carried out to investigate alternative sources of ferromagnetism, such as secondary phases and nanocrystals embedded in the bulk material. Conjugating different techniques we confirmed the Zn replacement by Co ions in the wurtzite ZnO structure, which retains, however, a high crystalline quality. No segregated secondary phases neither Co-rich nanocrystals were detected. Superconducting quantum interference device magnetometry demonstrates a paramagnetic Curie-Weiss behavior with antiferromagnetic interactions. We discuss the observed room temperature paramagnetism of our samples considering the current models for the magnetic properties of diluted magnetic semiconductors.

[P182-10] "Absorption effects on plasmon polaritons in quasiperiodic photonic superlattices containing a metamaterial"

Reyes-Gomez, E., Raigoza, N., Cavalcanti, S. B., de Carvalho, C. A. A., and Oliveira, L. E.

Absorption effects on plasmon-polariton excitations in quasiperiodic (Fibonacci and Thue-Morse) one-dimensional stacks composed of layers of right-and left-handed materials are theoretically investigated. A Drude-type dispersive response for both the dielectric permittivity and magnetic permeability of the left-handed layer is considered. Maxwell's equations are solved for oblique incidence by using the transfer matrix formalism, and the reflection coefficient as a function of the frequency and incidence angle is obtained. The Fibonacci (or Thue-Morse) quasiperiodic structure leads to a Cantor-like photonic spectra for the plasmon-polariton modes. Moreover, results for the photonic band structure, density of states and reflection coefficient indicate that plasmon-polariton modes are robust in the presence of low and moderate levels of absorption

[P183-10] "Azimuthal di-hadron correlations in d plus Au and Au plus Au collisions at root s(NN)=200 GeV measured at the STAR detector"

Aggarwal, M. M., Ahammed, Z., Alakhverdyants, A. V., Alekseev, I., Alford, J., Anderson, B. D., et all

Yields, correlation shapes, and mean transverse momenta p(T) of charged particles associated with intermediate-to high-p(T) trigger particles (2.5 < p(T) < 10 GeV/c) in d + Au and Au + Au collisions at root s(NN) = 200 GeV are presented. For associated particles at higher p(T) greater than or similar to 2.5 GeV/c, narrow correlation peaks are seen in d + Au and Au + Au, indicating that the main production mechanism is jet fragmentation. At lower associated particle pT < 2 GeV/c, a large enhancement of the near- (Delta phi similar to 0) and away-side (Delta phi similar to pi) associated yields is found, together with a strong broadening of the away-side azimuthal distributions in Au + Au collisions compared to d + Au measurements, suggesting that other particle production mechanisms play a role. This is further supported by the observed significant softening of the away-side associated particle yield distribution at Delta phi similar to pi in central Au + Au collisions

[P184-10] "Balance functions from Au+Au, d+Au, and p+p collisions at root s(NN)=200 GeV"

Aggarwal, M. M., Ahammed, Z., Alakhverdyants, A. V., Alekseev, I., Alford, J., Anderson, B. D., et all

Balance functions have been measured for charged-particle pairs, identified charged-pion pairs, and identified charged-kaon pairs in Au + Au, d + Au, and p + p collisions at root s(NN) = 200 GeV at the Relativistic Heavy Ion Collider using the STAR detector. These balance functions are presented in terms of relative pseudorapidity, Delta eta, relative rapidity, Delta y, relative azimuthal angle, Delta phi, and invariant relative momentum, q(inv). For charged-particle pairs, the width of the balance function in terms of Delta eta scales smoothly with the number of participating nucleons, while HIJING and UrQMD model calculations show no dependence on centrality or system size. For charged-particle and charged-pion pairs, the balance functions widths in terms of Delta eta and Delta y are narrower in central Au + Au collisions than in peripheral collisions. The width for central collisions is consistent with thermal blast-wave models where the balancing charges are highly correlated in coordinate space at breakup. This strong correlation might be explained by either delayed hadronization or limited diffusion during the reaction. Furthermore, the narrowing trend is consistent with the lower kinetic temperatures inherent to more central collisions. In contrast, the width of the balance function for charged-kaon pairs in terms of Delta y shows little centrality dependence, which may signal a different production mechanism for kaons. The widths of the balance functions for charged pions and kaons in terms of q(inv) narrow in central collisions compared to peripheral collisions, which may be driven by the change in the kinetic temperature

[P185-10] "Calibration of single-photon detectors using quantum statistics"

Mogilevtsev, D.

I show that calibration of the single-photon detector can be performed without knowledge of the signal parameters. Only partial information about the state statistics is sufficient for that. If one knows that the state is the squeezed one or the

squeezed one mixed with the incoherent radiation, one can infer both the parameters of the state and the efficiency of the detector. For that one needs only to measure on/off statistics of detector clicks for the number of known absorbers placed before the detector. Thus, I suggest a scheme that performs a tomography of the signal and the measuring apparatus simultaneously

[P186-10] "Charged-particle multiplicity measurement in proton-proton collisions at root s=7 TeV with ALICE at LHC"

Aamodt, K., Abel, N., Abeysekara, U., brahantes Quintana, A., Abramyan, A., Adamova, D., Aggarwal, M., glieri Rinella, G., Agocs, A., guilar Salazar, S., Ahammed, Z., Ahmad, A., et all

The pseudorapidity density and multiplicity distribution of charged particles produced in proton-proton collisions at the LHC, at a centre-of-mass energy root s = 7 TeV, were measured in the central pseudorapidity region vertical bar eta vertical bar < 1. Comparisons are made with previous measurements at root s = 0.9 TeV and 2.36 TeV. At root s = 7 TeV, for events with at least one charged particle in |eta vertical bar| < 1, we obtain dN(ch)/d eta = 6.01 +/- 0.01(stat.) (-0.12) (+0.20) (syst.). This corresponds to an increase of 57.6%+/-0.4%(stat.) (-1.8%) (+3.6) (syst.) relative to collisions at 0.9 TeV, significantly higher than calculations from commonly used models. The multiplicity distribution at 7 TeV is described fairly well by the negative binomial distribution

[P187-10] "Cross sections for electron scattering by propane in the low- and intermediate-energy ranges"

de Souza, G. L. C., Lee, M. T., Sanches, I. P., Rawat, P., Iga, I., dos Santos, A. S., Machado, L. E., Sugohara, R. T., Brescansin, L. M., Homem, M. G. P., and Lucchese, R. R.

We present a joint theoretical-experimental study on electron scattering by propane (C3H8) in the low- and intermediate-energy ranges. Calculated elastic differential, integral, and momentum transfer as well as total (elastic + inelastic) and total absorption cross sections are reported for impact energies ranging from 2 to 500 eV. Also, experimental absolute elastic cross sections are reported in the 40- to 500-eV energy range. A complex optical potential is used to represent the electron-molecule interaction dynamics. A theoretical method based on the single- center- expansion close-coupling framework and corrected by the Pade approximant is used to solve the scattering equations. The experimental angular distributions of the scattered electrons are converted to absolute cross sections using the relative flow technique. The comparison of our calculated with our measured results, as well as with other experimental and theoretical data available in the literature, is encouraging

[P188-10] "Diffractive phase-shift lithography photomask operating in proximity printing mode"

Cirino, G. A., Mansano, R. D., Verdonck, P., Cescato, L., and Neto, L. G.

A phase shift proximity printing lithographic mask is designed, manufactured and tested. Its design is based on a Fresnel computer-generated hologram, employing the scalar diffraction theory. The obtained amplitude and phase distributions were mapped into discrete levels. In addition, a coding scheme using sub-cells structure was employed in order to increase the number of discrete levels, thus increasing the degree of freedom in the resulting mask. The mask is fabricated on a fused silica substrate and an amorphous hydrogenated carbon (a:C-H) thin film which act as amplitude modulation agent. The lithographic image is projected onto a resist coated silicon wafer, placed at a distance of 50 mu m behind the mask. The results show a improvement of the achieved resolution - linewidth as good as 1.5 mu m - what is impossible to obtain with traditional binary masks in proximity printing mode. Such achieved dimensions can be used in the fabrication of MEMS and MOEMS devices. These results are obtained with a UV laser but also with a small arc lamp light source exploring the partial coherence of this source.

[P189-10] "Direct Observation of Tetragonal Distortion in Epitaxial Structures through Secondary Peak Split in a Synchrotron Radiation Renninger Scan"

de Menezes, A. S., dos Santos, A. O., Almeida, J. M. A., Bortoleto, J. R. R., Cotta, M. A., Morelhao, S. L., and Cardoso, L. P.

This paper reports a direct observation of an interesting split of the (022)(022) four-beam secondary peak into two (022) and (022) three-beam peaks, in a synchrotron radiation Renninger scan (phi-scan), as an evidence of the layer tetragonal distortion in two InGaP/GaAs (001) epitaxial structures with different thicknesses. The thickness, composition, (a perpendicular to) perpendicular lattice parameter, and (01) in-plane lattice parameter of the two epitaxial ternary layers were obtained from rocking curves (omega-scan) as well as from the simulation of the (022)(022) split, and then, it allowed for the determination of the perpendicular and parallel (in-plane) strains. Furthermore, (022)(022) omega:phi mappings were measured in order to exhibit the multiple diffraction condition of this four-beam case with their split measurement

[P190-10] "Distinct High-T Transitions in Underdoped Ba1-xKxFe2As2"

Urbano, R. R., Green, E. L., Moulton, W. G., Reyes, A. P., Kuhns, P. L., Bittar, E. M., Adriano, C., Garitezi, T. M., Bufaical, L., and Pagliuso, P. G.

In contrast with the simultaneous structural and magnetic first order phase transition T-0 previously reported, our detailed investigation on an underdoped Ba0.84K0.16Fe2As2 single crystal unambiguously revealed that the transitions are not concomitant. The tetragonal (tau: I4/mmm)-orthorhombic (theta: Fmmm) structural transition occurs at T-S similar or equal to 110 K, followed by an adjacent long-range antiferromagnetic (AFM) transition at T-N similar or equal to 102 K. Hysteresis and coexistence of the tau and theta phases over a finite temperature range observed by NMR experiments confirm the first order character of the tau-theta transition and provide evidence that both T-S and T-N are strongly correlated. Our data also show that superconductivity develops in the theta phase below T-c = 20 K and coexists with AFM. This new observation, T-S not equal T-N, firmly establishes another similarity between the hole-doped BaFe2As2 and the electron-doped iron-arsenide superconductors

[P191-10] "Energy impact of waste recyclable in a Brazilian metropolitan"

Lino, F. A. M., Bizzo, W. A., da Silva, E. P., and Ismail, K. A. R.

The inclusion of selective collection of urban residual solids in the public policies is an issue adopted by many countries as a mean for reducing the impacts created by solid waste generation and destination. In Brazil. the selective collection of solid waste was implemented in Campinas. in 1991. The city is the third biggest in the state of Sao Paulo and has a population of about a million inhabitants. The amount of recyclable matter amounts to 1% of the mixed solid waste collected by the public service and deposited in sanitary landfills. In the present study, reports and data forwarded by the municipality public service and the private cooperative units regarding the selective collection of solid waste are analyzed from the energy saving view point. The analysis showed that about 10,9001 of diesel oil are used to collect 329 ton/month of recyclables. The resulting energy economy is about 32 times the fuel energy used by the collecting trucks in the same period. This amount of recyclables led to an energy economy of 12,552 GJ/month, enough for a monthly equivalent electric consumption of 4000 residences.

Resources Conservation and Recycling 54[11], 916-922. 2010.

[P192-10] "Evolution kinetics of nonequilibrium longitudinal-optical phonons generated by drifting electrons in III-nitrides: longitudinal-optical-phonon resonance"

Rodrigues, C. G., Vasconcellos, A. R., and Luzzi, R.

The case of n-doped direct gap polar semiconductors in the presence of moderate to high electric fields is considered. The study is centered on the theoretical analysis of the behavior of LO phonons generated by drifting electrons. The emergence of a kind of "resonance" (or "overheating") in the LO-phonon distribution which is centered on an off-center region of the Brillouin zone is evidenced. It consists in a preferential concentration of nonthermal populations of LO phonons in the form of a lobular distribution with its axis along the direction of the electric field. Numerical calculations performed for the case of strongly polar GaN accompanied with descriptive figures are presented.

Journal of Applied Physics 108[3]. 033716. 2010.

[P193-10] "gamma cross section in p plus p collisions at root s=200 GeV"

Abelev, B. I., Aggarwal, M. M., Ahammed, Z., Alakhverdyants, A. V., Anderson, B. D., Arkhipkin, D., Averichev, G. S., et all

We report on a measurement of the gamma(1S + 2S + 3S) -> e(+)e(-) cross section at midrapidity in p + p collisions at root s = 200 GeV. We find the cross section to be 114 +/- 38(stat + fit) (-24) (+23) (syst) pb. Perturbative QCD calculations at next-to-leading order in the color evaporation model are in agreement with our measurement, while calculations in the color singlet model underestimate it by 2 sigma. Our result is consistent with the trend seen in world data as a function of the center- of-mass energy of the collision and extends the availability of gamma data to RHIC energies. The dielectron continuum in the invariant-mass range near the gamma is also studied to obtain a combined yield of e(+)e(-) pairs from the sum of the Drell-Yan process and b-(b) over bar production

Physical Review D 82[1]. 012004. 2010.

[P194-10] "Human FEZ1 Protein Forms a Disulfide Bond Mediated Dimer: Implications for Cargo Transport"

Alborghetti, M. R., Furlan, A. S., Silva, J. C., Leme, A. F. P., Torriani, I. C. L., and Kobarg, J.

The human proteins FEZ1 (fasciculation and elongation protein zeta 1) and FEZ2 are orthologs of the protein UNC-76 from C. elegans, involved in the growth and fasciculation of the worms axon. Pull down assays showed that the protein FEZ1 interacts with other proteins (e.g., the protein SCOCO, short coiled-coil protein), mitochondria, and vesicles. These components may therefore represent cargoes to be transported along the microtubule, and the transport may be mediated through FEZ1 reported binding to kinesins (KIF3A). We previously showed that FEZ1 dimerizes in its N-terminal region and interacts with other proteins, including the candidate cargoe proteins, through its C-terminus. Here, we studied the fragment FEZ1(92-194) as well as full-length 6xHis-FEZ1 (1-392) in vitro and endogenous FEZ1 isolated from HEK 293 cells and were able to demonstrate the formation of an intermolecular disulfide bond through FEZ1 Cys-133, which appears to be essential for dimerization. This disulfide bond may be important for the FEZ1 role as a dimeric and bivalent transport adaptor molecule, since it establishes a strong link between the monomers, which could be a prerequisite for the simultaneous binding of two cargoes

Journal of Proteome Research 9[9], 4595-4603. 2010.

[P195-10] "Magnetic structures of the anisotropic intermetallic compounds Er2CoGa8 and Tm2CoGa8"

Johnson, R. D., Frawley, T., Manuel, P., Khalyavin, D. D., Adriano, C., Giles, C., Pagliuso, P. G., and Hatton, P. D.

Two members of the isostructural R2CoGa8 intermetallic series, Er2CoGa8 and Tm2CoGa8, have been studied by powder neutron diffraction. Antiferromagnetic ordering of the rare-earth sublattices was confirmed to occur at 3.0 K and 2.0 K, respectively. Furthermore, determination of the critical exponent showed Er2CoGa8 to adopt a three-dimensional universality class. In spite of a common magnetic easy axis and similar structural characteristics, the antiferromagnetic structures were found to be different for the erbium- and thulium-based compounds. The corresponding magnetic space groups were determined to be P(2a)mmm' and P(C)mmm. The difference in magnetic structures is discussed based on crystal electric field effects that are known to be prevalent in such materials

Physical Review B 82[10]. 104407. 2010.

[P196-10] "Midrapidity Antiproton-to-Proton Ratio in pp Collisons root s=0.9 and 7 TeV Measured by the ALICE Experiment"

Aamodt, K., Abel, N., Abeysekara, U., Quintana, A. A., Abramyan, A., Adamova, D., Aggarwal, M. M., Rinella, et all

The ratio of the yields of antiprotons to protons in pp collisions has been measured by the ALICE experiment at root s = 0.9 and 7 TeV during the initial running periods of the Large Hadron Collider. The measurement covers the transverse momentum interval 0.45 < p(t) < 1.05 GeV/c and rapidity vertical bar y vertical bar < 0.5. The ratio is measured to be R-vertical bar y vertical bar<0.5 = 0.957 +/- 0.006(stat) +/- 0.0014(syst) at 0.9 Tev and R-vertical bar y vertical bar<0.5 = 0.991 +/- 0.005 +/- 0.014(syst) at 7 TeV and it is independent of both rapidity and transverse momentum. The results are consistent with the conventional model of baryon-number transport and set

stringent limits on any additional contributions to baryon-number transfer over very large rapidity intervals in pp collisions

[P197-10] "Multi-strange particle production in relativistic heavy ion collisions at root s(NN)=62.4 GeV"

Vasconcelos, G. M. S.

We present preliminary STAR results on measurements of multi-strange particles Xi, Omega and their anti-particles from Au+Au and Cu+Cu at root sNN = 62.4 GeV collisions. In order to better understand the role of strangeness enhancement in nucleus-nucleus collisions and its scaling properties with system size, we compare the results from Au+Au and Cu+Cu reactions for different event centrality classes. Strangeness enhancement is discussed in the context of multi-strange to pion ratios. Finally, the Omega/phi f ratio is shown for different systems and energies for a systematic study

[P198-10] "Neon atoms oscillating inside carbon and boron nitride nanotubes: a fully atomistic molecular dynamics investigation"

Garcez, K. M., Moreira, E., Azevedo, D. L., and Galvao, D. S.

In the present work, based on extensive fully atomistic molecular dynamics simulations, we discuss the dynamics of neon atoms oscillating inside (5,5) single-walled carbon nanotubes (CNTs) and boron nitride nanotubes (BNNTs). Our results show that sustained high-frequency oscillatory regimes are possible for a large range of temperatures. Our results also show that the general features of the oscillations are quite similar to those observed in CNT and BNNT, in contrast with some speculations in previous works in the literature about the importance of broken symmetry and chirality exhibited by BNNTs

[P199-10] "Performances and stability of a 2.4 ton Gd organic liquid scintillator target for (nu)over-bar(e) detection"

Barabanov, I. R., Bezrukov, L. B., Cattadori, C. M., Danilov, N. A., di Vacri, A., Krilov, Y. Ioannucci, L., Yanovich, E. A., Aglietta, M., Bonardi, A., Bruno, G., Fulgione, W., Kemp, E., Malguin, A. S., Porta, A., and Selvi, M.

In this paper we report the performance and the chemical and physical properties of a 2 x 1.2 ton organic liquid scintillator target doped with Gd up to similar to 0.1%, and the results of a3 year long stability survey of the target. In particular we have measured and monitored the optical and fluorescent properties of the Gd-doped liquid scintillator (LS), the amount of both Gd and primary fluor in solution, and the performance of the two Gd doped targets as neutron detectors, namely neutron capture efficiency and average capture time. The experimental survey is ongoing, the targets being continuously monitored. From the spectrophotometric measurements performed on samples periodically extracted along the three years, we can exclude, at 99% C. L. level, a degradation of the light transmittance of the Gd-doped liquid scintillator larger than 1% y(-1); from the in-tank measurements no significant decrease of the neutron capture efficiency and neutron capture time is observed. This is the largest stable Gd-doped organic liquid scintillator target ever produced and continuously operated for a long period

[P200-10] "Preparation and characterization of ethanol-treated silk fibroin dense membranes for biomaterials application using waste silk fibers as raw material"

Nogueira, G. M., Rodas, A. C. D., Leite, C. A. P., Giles, C., Higa, O. Z., Polakiewicz, B., and Beppu, M. M.

The possibility of producing valued devices from low cost natural resources is a subject of broad interest. The present study explores the preparation and characterization of silk fibroin dense membranes using waste silk fibers from textile processing. Morphology, crystallinity, thermal resistance and cytotoxicity of membranes as well as the changes on the secondary structure of silk fibroin were analyzed after undergoing treatment with ethanol. Membranes presented amorphous patterns as determined via X-ray diffraction. The secondary structure of silk fibroin on dense membranes was either random coil (silk I) or p-sheet (silk II), before and after ethanol treatment, respectively. The sterilized membranes presented no cytotoxicity to endothelial cells during in vitro assays. This fact stresses the material potential to be used in the fabrication of biomaterials, as coatings of cardiovascular devices and as membranes for wound dressing or drug delivery systems.

[P201-10] "Probing the electrical anisotropy of multilayer graphene on the Si face of 6H-SiC"

Jouault, B., Jabakhanji, B., Camara, N., Desrat, W., Tiberj, A., Huntzinger, J. R., Consejo, C., Caboni, A., Godignon, P., Kopelevich, Y., and Camassel, J.

We studied the in-plane magnetoresistance R(B, T) anisotropy in epitaxial multilayer graphene films grown on the Si face of a 6H-SiC substrate that originates from steplike morphology of the SiC substrate. To enhance the anisotropy, a combination of argon atmosphere with graphite capping was used during the film growth. The obtained micro-Raman spectra demonstrated a complex multilayer graphene structure with the smaller film thickness on terraces as compared to the step edges. Several Hall bars with different current/steps mutual orientations have been measured. A clear anisotropy in the magnetoresistance has been observed, and attributed to variations in electron mobility governed by the steplike structure. Our data also revealed that (i) the graphene-layer stacking is mostly Bernal type, (ii) the carriers are massive, and (iii) the carriers are confined to the first 2-4 graphene layers following the buffer layer

[P202-10] "Strangeness in Quark Matter (SQM2009) PREFACE"

Fraga, E., Kodama, T., Padula, S., and Takahashi, J.

[P203-10] "Suppression of Anderson localization of light and Brewster anomalies in disordered superlattices containing a dispersive metamaterial"

Mogilevtsev, D., Pinheiro, F. A., dos Santos, R. R., Cavalcanti, S. B., and Oliveira, L. E

Light propagation through one-dimensional disordered structures composed of alternating layers, with random thicknesses, of air and a dispersive metamaterial is theoretically investigated. We have established that Anderson localization of light may be suppressed: (i) in the long-wavelength limit, for a finite angle of incidence which depends on the parameters of the dispersive metamaterial; (ii) for isolated frequencies and for specific angles of incidence, corresponding to Brewster anomalies in both positive-and negative-refraction regimes of the dispersive metamaterial. On the other hand, in the long-wavelength limit, the localization length tends to a constant value for sufficiently large angles of incidence, in contrast to what is generally expected for disordered systems. We also find that delocalization at the very edge of a band gap is possible, a result which could be explored to observe slow light propagation in disordered photonic structures

Physical Review B 82[8]. 081105. 2010.

[P204-10] "The fluorescence detector of the Pierre Auger Observatory"

Abrahams, J., Abreu, P., Aglietta, M., Aguirre, C., Ahn, E. J., Allard, D., Allekotte, I., Allen, J., Allison, P., et all

The Pierre Auger Observatory is a hybrid detector for ultra-high energy cosmic rays. It combines a surface array to measure secondary particles at ground level together with a fluorescence detector to measure the development of air showers in the atmosphere above the array. The fluorescence detector comprises 24 large telescopes specialized for measuring the nitrogen fluorescence caused by charged particles of cosmic ray air showers. In this paper we describe the components of the fluorescence detector including its optical system, the design of the camera, the electronics, and the systems for relative and absolute calibration. We also discuss the operation and the monitoring of the detector. Finally, we evaluate the detector performance and precision of shower reconstructions.

Nuclear Instruments & Methods in Physics Research Section A-Accelerators Spectrometers Detectors and Associated Equipment 620[2-3], 227-251. 2010.

[P205-10] "Thermoelastic analysis of a silicon surface under x-ray free-electron-laser irradiation"

de Castro, A. R. B., Vasconcellos, A. R., and Luzzi, R.

We present an analysis of the time evolution of a highly excited silicon substrate after partial absorption of a femtosecond soft x-ray pulse. The detailed time-dependent thermoelastic behavior of the substrate in terms of the displacements $u(r,t)$ is derived for time delays for which the usual local thermodynamic variables, temperature $T(r,t)$ and density $n(r,t)$, become well-defined, namely, a few hundred femtoseconds after x-ray pulse absorption.

For practical optical components under present conditions of operation with trains of pulses, we find that in a worst case scenario, already the second pulse in the train could be adversely affected by dynamic thermal distortion induced by the preceding pulse.

Review of Scientific Instruments 81[7]. 073102. 2010.

[P206-10] "Two-pion Bose-Einstein correlations in pp collisions at root s=900 GeV"

Aamodt, K., Abel, N., Abeysekara, U., Quintana, A. A., Abramyan, A., Adamova, D., Aggarwal, M. M., Rinella, G. A., Agocs, A. G.,et all

We report on the measurement of two-pion correlation functions from pp collisions at root s = 900 GeV performed by the ALICE experiment at the Large Hadron Collider. Our analysis shows an increase of the Hanbury Brown-Twiss radius with increasing event multiplicity, in line with other measurements done in particle- and nuclear collisions. Conversely, the strong decrease of the radius with increasing transverse momentum, as observed at the Relativistic Heavy Ion Collider and at Tevatron, is not manifest in our data

Physical Review D 82[5]. 052001. 2010.

[P207-10] "Vibration-enhanced quantum transport"

Semiao, F. L., Furuya, K., and Milburn, G. J.

In this paper, we study the role of collective vibrational motion in the phenomenon of electronic energy transfer (EET) along a chain of coupled electronic dipoles with varying excitation frequencies. Previous experimental work on EET in conjugated polymer samples suggested that the common structural framework of the macromolecule introduces correlations in the energy gap fluctuations that cause coherent EET. Inspired by these results, we present a simple model in which a driven nanomechanical resonator mode modulates the excitation energy of coupled quantum dots and we find that this can indeed lead to an enhancement in the transport of excitations across the quantum network. Disorder in the on-site energies is a key requirement for this to occur. We also show that, in this solid state system, phase information is partially retained in the transfer process, as experimentally demonstrated in conjugated polymer samples. Consequently, this mechanism of vibration-enhanced quantum transport might find applications in quantum information transfer of qubit states or entanglement

New Journal of Physics 12. 083033 2010.