College of Liberal Arts and Sciences
Scholarly publications from SCOPUS – month ending 15Nov2015

ANTHROPOLOGY

Opitz, R. S., Ryzewski, K., Cherry, J. F., & Moloney, B. (2015). Using airborne LiDAR survey to explore historic-era archaeological landscapes of Montserrat in the Eastern Caribbean. *Journal of Field Archaeology, 40*(5), 523-541.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84946240217&partnerID=40&md5=abd5dd64740b0efa63d79712cda03bd8.
This article describes what appears to be the first archaeological application of airborne LiDAR survey to historic-era landscapes in the Caribbean archipelago, on the island of Montserrat. LiDAR is proving invaluable in extending the reach of traditional pedestrian survey into less favorable areas, such as those covered by dense neotropical forest and by ashfall from the past two decades of active eruptions by the Soufrie're Hills volcano, and to sites in localities that are inaccessible on account of volcanic dangers. Emphasis is placed on two aspects of the research: first, the importance of ongoing, real-time interaction between the LiDAR analyst and the archaeological team in the field; and second, the advantages of exploiting the full potential of the three-dimensional LiDAR point cloud data for purposes of the visualization of archaeological sites and features. © Trustees of Boston University 2015.

BIOLOGICAL SCIENCES

Gasparski, A. N., & Beningo, K. A. (2015). Mechanoreception at the cell membrane: More than the integrins. *Archives of Biochemistry and Biophysics, 586*, 20-26.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84943261895&partnerID=40&md5=da122a1da6da24d63a7955a0c47abcb3.
A cell receives mechanical cues from its surrounding microenvironment and transduces this mechanical information into a biochemical signal within the cell, ultimately resulting in physiological change. Several molecules within the plasma membrane have been identified that are capable of receiving and translating a mechanical signal. Although integrins are most often discussed as the cell's primary method of mechanoreception at the cell membrane, several non-integrin mechanoreceptors have emerged over the last decade. Specifically, multiple G-protein coupled receptors, the glycocalyx, ion channels, lipid rafts and receptor tyrosine kinases have been found to translate mechanical stimuli from the environment into cellular change. This review will discuss these non-integrin mechanoreceptors associated with the plasma membrane, and their impact on cell physiology.

CHEMISTRY

Chernyak, V. Y., Saurabh, P., & Mukamel, S. (2015). Non-linear non-local molecular electrodynamics with nano-optical fields. *Journal of Chemical Physics, 143*(16).
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-

84945916362&partnerID=40&md5=fefa5e12a03c3c1488240d592354132c.
The interaction of optical fields sculpted on the nano-scale with matter may not be described by the dipole approximation since the fields may vary appreciably across the molecular length scale. Rather than incrementally adding higher multipoles, it is advantageous and more physically transparent to describe the optical process using non-local response functions that intrinsically include all multipoles. We present a semi-classical approach for calculating non-local response functions based on the minimal coupling Hamiltonian. The first, second, and third order response functions are expressed in terms of correlation functions of the charge and the current densities. This approach is based on the gauge invariant current rather than the polarization, and on the vector potential rather than the electric and magnetic fields. © 2015 AIP Publishing LLC.

James, D. J., Lu, X., Morelli, D. T., & Brock, S. L. (2015). Solvothermal Synthesis of Tetrahedrite: Speeding Up the Process of Thermoelectric Material Generation. *ACS Applied Materials and Interfaces, 7*(42), 23623-23632.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84946057784&partnerID=40&md5=b941a402c138910d2f3458935491f07f.
Derivatives of synthetic tetrahedrite, Cu12Sb4S13, are receiving increasing attention in the thermoelectric community due to their exploitation of plentiful, relatively nontoxic elements, combined with a thermoelectric performance that rivals that of PbTe-based compounds. However, traditional synthetic methods require weeks of annealing at high temperatures (450-600 °C) and periodic regrinding of the samples. Here we report a solvothermal method to produce tetrahedrite that requires only 1 day of heating at a relatively low temperature (155 °C). This allows preparation of multiple samples at once and is potentially scalable. The solvothermal material described herein demonstrates a dimensionless figure of merit (ZT) vs temperature curve comparable to that of solid-state tetrahedrite, achieving the same ZT of 0.63 at 720 K. As with the materials from solid-state synthesis, products from this rapid solvothermal synthesis can be improved by mixing in a 1:1 molar ratio with the Zn-containing natural mineral, tennantite, to achieve 0.9 mol equiv of Zn. This leads to a 36% increase in ZT at 720 K for solvothermal tetrahedrite, to 0.85. © 2015 American Chemical Society.

Krause, P., & Schlegel, H. B. (2015). Angle-Dependent Ionization of Hydrides AHn Calculated by Time-Dependent Configuration Interaction with an Absorbing Potential. *Journal of Physical Chemistry A, 119*(40), 10212-10220.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84943598573&partnerID=40&md5=0ef1bec2881ad116a508262618ddf56d.
The angle dependence of strong-field ionization was studied for a set of second period hydrides (BH3, CH4, NH3, H2O, and HF) and third period hydrides (AlH3, SiH4, PH3, H2S, and HCl). Time-dependent configuration interaction with a complex absorbing potential was used to model ionization by a seven cycle 800 nm cosine squared pulse. The ionization yields were calculated as a function of the laser polarization and plotted as three-dimensional surfaces. The general shapes of angular dependence can be understood in terms of ionization from the highest occupied orbitals. Variations in the shapes with laser intensity indicate that ionization occurs not just from the highest occupied orbitals, but also from lower-lying orbitals. These deductions are

supported by variations in the population analysis with the intensity of the laser field and the direction of polarization. © 2015 American Chemical Society.

Theilacker, K., Schlegel, H. B., Kaupp, M., & Schwerdtfeger, P. (2015). Relativistic and Solvation Effects on the Stability of Gold(III) Halides in Aqueous Solution. *Inorganic Chemistry, 54*(20), 9869-9875.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84945268143&partnerID=40&md5=e90374b6a7d2751cb7baa08f09da9dd1.
The redox stability of gold halide complexes in aqueous solution has been examined quantum-chemically by a systematic comparison of scalar- and nonrelativistic pseudopotential calculations, using both COSMO and D-COSMO-RS solvent models for water. After a computational benchmarking of density-functional methods against CCSD(T) results for the gas phase decomposition AuX4 - → AuX2 - + X2, B3LYP calculations have been used to establish solvent contributions. While relativity clearly enhances the stability of AuX4 - (X = F, Cl, Br, I) complexes against X2 elimination, solvation favors the lower oxidation state. Solvation and relativity are nonadditive, due to the relativistic reduction of bond polarity. At scalar relativistic D-COSMO-RS level, the reaction AuX4 - ⇌ AuX2 - + X2 is computed to be endergonic, except for X = I, where it is slightly exergonic. Under the chosen conditions, partial hydrolysis of AuCl4 - to AuCl3OH- is exergonic. The latter complex in turn is stable against Cl2 elimination. The disproportionation 3 AuCl2 - ⇌ AuCl4 - + 2 Au(s) + 2 Cl- is clearly exergonic. All of the computed reaction energies at scalar relativistic D-COSMO-RS level agree well with the observed speciation in dilute pH-neutral solutions at ambient temperatures. © 2015 American Chemical Society.

Yousif, M., Tjapkes, D. J., Lord, R. L., & Groysman, S. (2015). Catalytic Formation of Asymmetric Carbodiimides at Mononuclear Chromium(II/IV) Bis(alkoxide) Complexes. *Organometallics, 34*(20), 5119-5128.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84945961907&partnerID=40&md5=6be6d162334437464960a3d18181dc8d.
Herein we report the synthesis of Cr imido complexes in bis(alkoxide) ligand environments and their nitrene transfer reactivity with isocyanides. The reaction of Cr2(OR)4 (OR = OCtBu2Ph) with bulky aryl or alkyl azide results in the formation of the trigonal-planar Cr(IV) mono(imido) complexes Cr(OR)2(NR1), whereas less bulky aryl azides form the Cr(VI) bis(imido) complexes Cr(OR)2(NR1)2. Cr(IV) mono(imido) complexes undergo facile reaction with 1 equiv of 2,6-dimethylphenyl isocyanide (CNR2) to form the corresponding carbodiimides R1NCNR2. In contrast, no reaction of Cr(OR)2(NR1)2 complexes with CNR2 is observed. The reaction of Cr(OR)2(NR1) with excess isocyanide leads to the isolation of the Cr(II) complex Cr(OR)2(CNR2)4, along with the observation of the anticipated carbodimide product. Cr(OR)2(CNR2)4, which can also be obtained by treating Cr2(OR)4 with 4 equiv of isocyanide, reacts with azides N3R1 (R1 = adamantyl, mesityl) to produce the respective carbodiimides. Catalytic formation of carbodiimides R1NCNR2 is observed from the mixtures of azides R1N3 (R1 = mesityl, 2,6-diethylphenyl, 2-isopropylphenyl, adamantyl) and several different aryl isocyanides CNR2 using 2.5 mol % of Cr2(OR)4. © 2015 American Chemical Society.

CRIMINAL JUSTICE

Hu, R., Sun, I. Y., & Wu, Y. (2015). Chinese Trust in the Police: The Impact of Political Efficacy and Participation. *Social Science Quarterly, 96*(4), 1012-1026.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84946483274&partnerID=40&md5=c0acd41019df6c12a6476bbf51be9fff.
Objective: We assessed the influences of political efficacy and political participation on public perceptions of police trustworthiness in China. Methods: Drawing upon approximately 10,000 cases collected by the Chinese General Social Survey (CGSS), we used multivariate regression to assess the impact of two types of political efficacy, internal efficacy and external efficacy, and three forms of political participation, engaging in community affairs, grassroots election, and rightful resistance, on public trust in the police, controlling for demographics and social trust and justice. Results: We found that external efficacy and grassroots election are positively related to trust in the police, whereas internal efficacy and rightful resistance are negatively associated with such trust. Background characteristics, such as gender, ethnicity, age, education, and household registration, and social trust and justice variables are also predictive of Chinese perceptions of police trustworthiness. Conclusion: Political efficacy and participation mattered in influencing trust in the police. The Chinese government should continue its political reforms by allowing greater public participation in the selection of political representatives and the decision-making process of public policy. © 2015 Southwestern Social Science Association.

Klahm, C. F., & Tillyer, R. (2015). Rethinking the Measurement of Officer Experience and Its Role in Traffic Stop Searches. *Police Quarterly, 18*(4), 343-367.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84945131869&partnerID=40&md5=b543cc428fc4cb7d456f29a4324140b2.
The role officer experience plays in shaping behavioral choices has received considerable attention. Officer experience has most often been captured by measuring years of service in policing literature. Thus, the field's understanding of how officer experience shapes behavior choices is limited because years of service are not experienced monolithically. The current study employed multivariate, multilevel models to test three research hypotheses based on existing theoretical explanations of police behavior and psychology literature to more fully explore the influence of officer experience on discretionary search behavior. The results indicate that years of service provide an incomplete understanding of how experience motivates behavior in the traffic stop search context. A more complete understanding requires accounting for aspects of exposure to certain situational characteristics, activities undertaken, and work performance, suggesting that failing to incorporate multidimensional operationalizations of experience limits our ability to fully understand the influence of officer experience on decision making. © 2015, © The Author(s) 2015.

MATHEMATICS

Chen, G., Chen, W., Ma, L., Guo, A., Lü, J., Zhang, Z., & Zheng, S. (2015). Strain-

compensated arrhenius-type constitutive model for flow behavior of Al-12Zn-2.4Mg-1.2Cu alloy. *Xiyou Jinshu Cailiao Yu Gongcheng/Rare Metal Materials and Engineering, 44*(9), 2120-2125.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84944698760&partnerID=40&md5=211244ae5b8e4738a88a584735e8e9ad.
The isothermal hot compression tests of as-extruded Al-12Zn-2.4Mg-1.2Cu alloy were performed on a Gleeble-3500 thermo-simulation machine. Based on the Arrhenius-type constitutive model, the experimental stress-strain data over a wide range of temperatures (523~723 K), strains (0.1~0.6) and strain rates (0.001, 0.01, 0.1 and 1 s-1) were employed to develop a suitable constitutive model to predict the elevated temperature flow behavior. The effects of temperature and strain rate on deformation behavior were represented by Zener-Holloman parameter in an exponent-type equation. The influence of strain was incorporated in constitutive analysis by considering the effect of strain on material constants. Suitability of the developed constitutive model was evaluated by comparing experimental and predicted data in terms of correlation coefficient (R) and average absolute relative error (AARE). Results show that the values of R and ARRE are 0.995 82 and 6.66%, respectively, which indicate that the developed model considering the compensation of stain can predict flow stress of experimental alloy and has good correlation and generalization.

Hadjisavvas, N., Iusem, A. N., & Mordukhovich, B. S. (2015). Preface. *Journal of Global Optimization*.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84945588760&partnerID=40&md5=b728a13dddd935c12b60395c490d6ad2.
(No abstract available).

Jin, G., Li, H., Zhang, Q., & Zou, Q. (2016). Linear and quadratic finite volume methods on triangular meshes for elliptic equations with singular solutions. *International Journal of Numerical Analysis and Modeling, 13*(2), 240-260.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84946073708&partnerID=40&md5=60097f53bb4a31566fd9038ea7f6c25f.
This paper is devoted to the presentation and analysis of some linear and quadratic finite volume (FV) schemes for elliptic problems with singular solutions due to the non-smoothness of the domain. Our FV schemes are constructed over specially-designed graded triangular meshes. We provide sharp parameter selection criteria for the graded mesh, such that both the linear and quadratic FV schemes achieve the optimal convergence rate approximating singular solutions in H1. In addition, we show that on the same mesh, a linear FV scheme obtains the optimal rate of convergence in L2. Numerical tests are provided to verify the analysis.

Li, B., & Zhang, Z. (2015). A new approach for numerical simulation of the time-dependent Ginzburg-Landau equations. *Journal of Computational Physics, 303*, 238-250.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84944221689&partnerID=40&md5=a319d5e0c8443c525e225a72f7a74168.

We introduce a new approach for finite element simulations of the time-dependent Ginzburg-Landau equations (TDGL) in a general curved polygon, possibly with reentrant corners. Specifically, we reformulate the TDGL into an equivalent system of equations by decomposing the magnetic potential to the sum of its divergence-free and curl-free parts, respectively. Numerical simulations of vortex dynamics show that, in a domain with reentrant corners, the new approach is much more stable and accurate than the traditional approaches of solving the TDGL directly (under either the temporal gauge or the Lorentz gauge); in a convex domain, the new approach gives comparably accurate solutions as the traditional approaches. © 2015 Elsevier Inc.

Malcolmson, P., & Okoh, F. (2016). Half-factorial subrings of factorial domains. *Journal of Pure and Applied Algebra, 220*(3), 877-891.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84944711218&partnerID=40&md5=c2cdf4c8d2830ee673b1cef516a49f53.
A half-factorial domain D is a domain in which every non-zero element that is not a unit is a product of a unique number of irreducible elements of D. We characterize half-factorial subrings R of factorial domains S when S is the integral closure of R and their unit groups are identical. Let A be a factorial domain and A[T] the polynomial ring over A in the variable T. The characterization is used to describe the half-factorial A-subalgebras R with multiplicative conductors of A[T] into R. © 2015.

Xi, F. B., & Yin, G. (2015). Stochastic Liénard equations with state-dependent switching. *Acta Mathematicae Applicatae Sinica, 31*(4), 893-908.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84945948932&partnerID=40&md5=1e84f6fae1fecc4febd554e64a606107.
This work focuses on stochastic Liénard equations with state-dependent switching. First, the existence and uniqueness of a strong solution are obtained by successive construction method. Next, strong Feller property is proved by introducing certain auxiliary processes and using the Radon-Nikodym derivatives and truncation arguments. Based on these results, positive Harris recurrence and exponential ergodicity are obtained under the Foster-Lyapunov drift conditions. Finally, examples using van der Pol equations are presented for illustrations, and the corresponding Foster-Lyapunov functions for the examples are constructed explicitly. © 2015, Institute of Applied Mathematics, Academy of Mathematics and System Sciences, Chinese Academy of Sciences and Springer-Verlag Berlin Heidelberg.

Zhu, C., Yin, G., & Baran, N. A. (2015). Feynman–Kac formulas for regime-switching jump diffusions and their applications. *Stochastics, 87*(6), 1000-1032.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84944173104&partnerID=40&md5=250d016f94ff843cf4c2c9a649e7598c.
This work develops Feynman–Kac formulas for a class of regime-switching jump diffusion processes, in which the jump part is driven by a Poisson random measure associated with a general Lévy process and the switching part depends on the jump diffusion processes. Under broad conditions, the connections of such stochastic processes and the corresponding partial integro-differential equations are established. Related initial, terminal and boundary value

problems are also treated. Moreover, based on weak convergence of probability measures, it is demonstrated that a sequence of random variables related to the regime-switching jump diffusion process converges in distribution to the arcsine law. © 2015 Taylor & Francis.

PHILOSOPHY

Wilburn, J. (2015). Courage and the spirited part of the soul in Plato's republic. *Philosophers Imprint, 15*(26), 1-21.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84945130034&partnerID=40&md5=916316086fb18da2e38305be5d642651.
(No abstract available).

PHYSICS

Aaltonen, T., Abazov, V. M., Abbott, B., Acharya, B. S., Adams, M., Adams, T., . . . Zucchelli, S. (2015). Tevatron Combination of Single-Top-Quark Cross Sections and Determination of the Magnitude of the Cabibbo-Kobayashi-Maskawa Matrix Element Vtb. *Physical Review Letters, 115*(15).
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84944111646&partnerID=40&md5=27e3c016bbdd9b8a72bc69c5eb428273.
We present the final combination of CDF and D0 measurements of cross sections for single-top-quark production in proton-antiproton collisions at a center-of-mass energy of 1.96 TeV. The data correspond to total integrated luminosities of up to 9.7fb-1 per experiment. The t-channel cross section is measured to be σt=2.25-0.31+0.29pb. We also present the combinations of the two-dimensional measurements of the s- vs t-channel cross section. In addition, we give the combination of the s+t channel cross section measurement resulting in σs+t=3.30-0.40+0.52pb, without assuming the standard model value for the ratio σs/σt. The resulting value of the magnitude of the top-to-bottom quark coupling is |Vtb|=1.02-0.05+0.06, corresponding to |Vtb|>0.92 at the 95% C.L. © 2015 American Physical Society.

Adamczyk, L., Adkins, J. K., Agakishiev, G., Aggarwal, M. M., Ahammed, Z., Alekseev, I., . . . Zoulkarneeva, Y. (2015). Di-hadron correlations with identified leading hadrons in 200 GeV Au+Au and d+Au collisions at STAR. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, 751*, 233-240.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84945326598&partnerID=40&md5=3454ef194ba7b595cfe8c723fa19afc8.
The STAR Collaboration presents for the first time two-dimensional di-hadron correlations with identified leading hadrons in 200 GeV central Au. +. Au and minimum-bias d. +. Au collisions to explore hadronization mechanisms in the quark gluon plasma. The enhancement of the jet-like yield for leading pions in Au. +. Au data with respect to the d. +. Au reference and the absence of such an enhancement for leading non-pions (protons and kaons) are discussed within the context of a quark recombination scenario. The correlated yield at large angles, specifically in

the ridge region, is found to be significantly higher for leading non-pions than pions. The consistencies of the constituent quark scaling, azimuthal harmonic model and a mini-jet modification model description of the data are tested, providing further constraints on hadronization. © 2015 The Authors.

Huschle, M., Kuhr, T., Heck, M., Goldenzweig, P., Abdesselam, A., Adachi, I., . . . Zupanc, A. (2015). Measurement of the branching ratio of $B^- \to d^{(*)}\tau^- \nu^-_\tau$ relative to $B^- \to d^{(*)} \ell^- \nu^-_\ell$ decays with hadronic tagging at Belle MEASUREMENT of the BRANCHING RATIO of ⋯ M. HUSCHLE et al. *Physical Review D - Particles, Fields, Gravitation and Cosmology, 92*(7).
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84945248300&partnerID=40&md5=b8fd4f3829e8640c3f2928d43ca7cf23.
We report a measurement of the branching fraction ratios $R(D^{(*)})$ of $B^- \to D^{(*)}\tau^-\nu^-_\tau$ relative to $B^- \to D^{(*)}\ell^-\nu^-_\ell$ (where ℓ =e or μ) using the full Belle data sample of $772\times10^6 B\bar{B}$ pairs collected at the $\Upsilon(4S)$ resonance with the Belle detector at the KEKB asymmetric-energy e+e- collider. The measured values are $R(D)=0.375\pm0.064(\text{stat})\pm0.026(\text{syst})$ and $R(D^*)=0.293\pm0.038(\text{stat})\pm0.015(\text{syst})$. The analysis uses hadronic reconstruction of the tag-side B meson and purely leptonic τ decays. The results are consistent with earlier measurements and do not show a significant deviation from the standard model prediction. © 2015 American Physical Society. © 2015 American Physical Society.

Khachatryan, V., Sirunyan, A. M., Tumasyan, A., Adam, W., Asilar, E., Bergauer, T., . . . Woods, N. (2015). Limits on the Higgs boson lifetime and width from its decay to four charged leptons. *Physical Review D - Particles, Fields, Gravitation and Cosmology, 92*(7).
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84945265895&partnerID=40&md5=d5f1db47321c6b270eb360dec1699251.
Constraints on the lifetime and width of the Higgs boson are obtained from $H\to ZZ\to 4\ell$ events using data recorded by the CMS experiment during the LHC run 1 with an integrated luminosity of 5.1 and 19.7fb-1 at a center-of-mass energy of 7 and 8 TeV, respectively. The measurement of the Higgs boson lifetime is derived from its flight distance in the CMS detector with an upper bound of $\tau_H<1.9\times10^{-13}$s at the 95% confidence level (C.L.), corresponding to a lower bound on the width of $\Gamma_H>3.5\times10^{-9}$MeV. The measurement of the width is obtained from an off-shell production technique, generalized to include anomalous couplings of the Higgs boson to two electroweak bosons. From this measurement, a joint constraint is set on the Higgs boson width and a parameter $f_{\Lambda Q}$ that expresses an anomalous coupling contribution as an on-shell cross-section fraction. The limit on the Higgs boson width is $\Gamma_H<46$MeV with $f_{\Lambda Q}$ unconstrained and $\Gamma_H<26$MeV for $f_{\Lambda Q}=0$ at the 95% C.L. The constraint $f_{\Lambda Q}<3.8\times10^{-3}$ at the 95% C.L. is obtained for the expected standard model Higgs boson width. © 2015 CERN, for the CMS. Published by the American Physical Society.

Khachatryan, V., Sirunyan, A. M., Tumasyan, A., Adam, W., Asilar, E., Bergauer, T., . . . Woods, N. (2015). Pseudorapidity distribution of charged hadrons in proton-proton collisions at s=13 TeV. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, 751*, 143-163.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-

84945302996&partnerID=40&md5=29304cc97370e8d3c18851f28fc67a1c.
The pseudorapidity distribution of charged hadrons in pp collisions at s=13 TeV is measured using a data sample obtained with the CMS detector, operated at zero magnetic field, at the CERN LHC. The yield of primary charged long-lived hadrons produced in inelastic pp collisions is determined in the central region of the CMS pixel detector (|η|<2) using both hit pairs and reconstructed tracks. For central pseudorapidities (|η|<0.5), the charged-hadron multiplicity density is dNch/dη||η|<0.5=5.49±0.01(stat)±0.17(syst), a value obtained by combining the two methods. The result is compared to predictions from Monte Carlo event generators and to similar measurements made at lower collision energies. © 2015 CERN for the benefit of the CMS Collaboration.

Khachatryan, V., Sirunyan, A. M., Tumasyan, A., Adam, W., Asilar, E., Bergauer, T., . . . Woods, N. (2015). Search for diphoton resonances in the mass range from 150 to 850 GeV in pp collisions at √s = 8 TeV. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, 750*, 494-519.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84944268402&partnerID=40&md5=0fa920b8dc351d4440b56c8c2728c95b.
Results are presented of a search for heavy particles decaying into two photons. The analysis is based on a 19.7fb-1 sample of proton-proton collisions at s=8TeV collected with the CMS detector at the CERN LHC. The diphoton mass spectrum from 150 to 850GeV is used to search for an excess of events over the background. The search is extended to new resonances with natural widths of up to 10% of the mass value. No evidence for new particle production is observed and limits at 95% confidence level on the production cross section times branching fraction to diphotons are determined. These limits are interpreted in terms of two-Higgs-doublet model parameters. © 2015 CERN for the benefit of the CMS Collaboration.

Khachatryan, V., Sirunyan, A. M., Tumasyan, A., Adam, W., Asilar, E., Bergauer, T., . . . Woods, N. (2015). Search for supersymmetry with photons in pp collisions at s =8TeV. *Physical Review D - Particles, Fields, Gravitation and Cosmology, 92*(7).
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84945247800&partnerID=40&md5=603db4cc941eba7c59ced529fd6dcf6a.
Two searches for physics beyond the standard model in events containing photons are presented. The data sample used corresponds to an integrated luminosity of 19.7fb-1 of proton-proton collisions at s=8TeV, collected with the CMS experiment at the CERN LHC. The analyses pursue different inclusive search strategies. One analysis requires at least one photon, at least two jets, and a large amount of transverse momentum imbalance, while the other selects events with at least two photons and at least one jet, and uses the razor variables to search for signal events. The background expected from standard model processes is evaluated mainly from data. The results are interpreted in the context of general gauge-mediated supersymmetry, with the next-to-lightest supersymmetric particle either a bino- or wino-like neutralino, and within simplified model scenarios. Upper limits at the 95% confidence level are obtained for cross sections as functions of the masses of the intermediate supersymmetric particles. © 2015 CERN.

Khachatryan, V., Sirunyan, A. M., Tumasyan, A., Adam, W., Bergauer, T., Dragicevic, M., . . . Woods, N. (2015). Study of W boson production in pPb collisions at √sNN = 5.02 TeV. *Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, 750*, 565-586.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84944205443&partnerID=40&md5=6de2cbfcc0d85c39ba16e594b459d101.
The first study of W boson production in pPb collisions is presented, for bosons decaying to a muon or electron, and a neutrino. The measurements are based on a data sample corresponding to an integrated luminosity of 34.6 nb-1 at a nucleon-nucleon centre-of-mass energy of √sNN = 5.02 TeV, collected by the CMS experiment. The W boson differential cross sections, lepton charge asymmetry, and forward-backward asymmetries are measured for leptons of transverse momentum exceeding 25 GeV/c, and as a function of the lepton pseudorapidity in the |η|lab|<2.4 range. Deviations from the expectations based on currently available parton distribution functions are observed, showing the need for including W boson data in nuclear parton distribution global fits. © 2015 CERN for the benefit of the CMS Collaboration.

Khan, S. H., & Hoffmann, P. M. (2015). Squeeze-out dynamics of nanoconfined water: A detailed nanomechanical study. *Physical Review E - Statistical, Nonlinear, and Soft Matter Physics, 92*(4).
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84945237158&partnerID=40&md5=9b95c0f054f09d60a8db16dd3b3c076a.
In this study, we present a detailed analysis of the squeeze-out dynamics of nanoconfined water confined between two hydrophilic surfaces measured by small-amplitude dynamic atomic force microscopy. Explicitly considering the instantaneous tip-surface separation during squeeze-out, we confirm the existence of an adsorbed molecular water layer on mica and at least two hydration layers. We also confirm the previous observation of a sharp transition in the viscoelastic response of the nanoconfined water as the compression rate is increased beyond a critical value (previously determined to be about 0.8 nm/s). We find that below the critical value, the tip passes smoothly through the molecular layers of the film, while above the critical speed, the tip encounters "pinning" at separations where the film is able to temporarily order. Preordering of the film is accompanied by increased force fluctuations, which lead to increased damping preceding a peak in the film stiffness once ordering is completed. We analyze the data using both Kelvin-Voigt and Maxwell viscoelastic models. This provides a complementary picture of the viscoelastic response of the confined water film. © 2015 American Physical Society.

Oswald, C., Urquijo, P., Dingfelder, J., Abdesselam, A., Adachi, I., Aihara, H., . . . Zupanc, A. (2015). Semi-inclusive studies of semileptonic Bs decays at Belle. *Physical Review D - Particles, Fields, Gravitation and Cosmology, 92*(7).
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84945283347&partnerID=40&md5=c4fa817fc462f3333a427313d1be0d11.
We present an analysis of the semi-inclusive decays Bs→Ds-Xℓ+ν and Bs→Ds∗-Xℓ+ν, where X

denotes a final state that may consist of additional hadrons or photons and ℓ is an electron or muon. The studied Bs decays are contained in the 121.4fb-1 Y(5S) data sample collected by the Belle detector at the KEKB asymmetric-energy e+e- collider. The branching fractions of the decays are measured to be B(Bs→Ds-Xℓ+ν)=[8.2±0.2(stat)±0.6(syst)±1.4(ext)]% and B(Bs→Ds∗-Xℓ+ν)=[5.4±0.4(stat)±0.4(syst)±0.9(ext)]%, where the first two uncertainties are statistical and systematic and the last is due to external parameters. The measurement also provides an estimate of the Bs(∗)B¯s(∗) production cross section, σ(e+e-→Bs(∗)B¯s(∗))=[53.8±1.4(stat)±4.0(syst)±3.4(ext)]pb, at the center-of-mass energy s=10.86GeV. © 2015 American Physical Society.

The CMS Collaboration. (2015). Search for a Higgs boson in the mass range from 145 to 1000 GeV decaying to a pair of W or Z bosons. *Journal of High Energy Physics, 2015*(10), 1-52.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84946051072&partnerID=40&md5=212f4c90877d44f0ba59854af974a868.
A search for a heavy Higgs boson in the H → WW and H → ZZ decay channels is reported. The search is based upon proton-proton collision data samples corresponding to an integrated luminosity of up to 5.1 fb−1 at √ s = 7 TeV and up to 19.7fb−1 at √ s = 8 TeV, recorded by the CMS experiment at the CERN LHC. Several final states of the H → WW and H → ZZ decays are analyzed. The combined upper limit at the 95% confidence level on the product of the cross section and branching fraction exclude a Higgs boson with standard model-like couplings and decays in the range 145 < mH < 1000 GeV. We also interpret the results in the context of an electroweak singlet extension of the standard model.[Figure not available: see fulltext.] © 2015, The Author(s).

POLITICAL SCIENCE

Geller, D. S., & Saperstein, A. M. (2015). A dynamic model of suicide terrorism and political mobilization. *International Political Science Review, 36*(5), 562-577.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84944030134&partnerID=40&md5=caddaae1ba40d4d0c925b6b36a670b6d.
This study considers the problem of suicide terrorism, government counterterror responses, and the mobilization of recruits in support of the contending parties. A model is developed that enables predictions as to what factors should be emphasized or de-emphasized by the forces protecting society. The article presents a linear mathematical analysis of the logical interrelationships involved in the confrontation and embeds the study within the framework of previous mathematical and empirical work on the subject. It is concluded that governments should avoid inflicting collateral damage on the general population in counterterrorist activities and should pursue policies (both in counterterrorist operations and otherwise) that contribute to the political quiescence of the populace. © 2014, © The Author(s) 2014.

PSYCHOLOGY

Fitzgerald, J. M., Berntsen, D., & Broadbridge, C. L. (2015). The Influences of Event Centrality in Memory Models of PTSD. *Applied Cognitive Psychology*.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84945299465&partnerID=40&md5=5a12ca8e4f6ded88cd1b8f00a21fd586.
The consequences of events for well-being are influenced by individual and situational factors that are often studied in isolation. In the research reported here, a large (N=489) nonclinical sample of college students reported their most traumatic event, posttraumatic stress disorder (PTSD) symptoms, depressive symptoms, personality traits, and characteristics of their event memory. This study achieved three major goals. First, we identified the highest types of stress event types in this population as disruptions of interpersonal relationships, homicides/assaults on others, and assaults/accidents involving themselves. Second, we established that the effects of memory characteristics such as vividness, belief, and impact on PTSD symptoms are mediated by the centrality of the event to identity. Third, we affirmed the hypothesis that a structural model of the influence of personality factors on PTSD symptoms has a higher level of concurrent validity if event centrality is included as a mediator of those influences. © 2015 John Wiley & Sons, Ltd.

Kopetz, C., & Orehek, E. (2015). When the End Justifies the Means: Self-Defeating Behaviors as "Rational" and "Successful" Self-Regulation. *Current Directions in Psychological Science, 24*(5), 386-391.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84944052704&partnerID=40&md5=097de810a835c1016b41f31cc93fa2b7.
We explore the possibility that self-defeating behaviors represent self-regulatory success rather than failure. Specifically, we suggest that drug use, overeating, risky sexual behavior, self-harm, and martyrdom represent means toward individuals' goals. In this capacity, they may be initiated and pursued upon goal activation despite potentially negative consequences, and thus exemplify the long-held notion that the end justifies the means. We propose a means-end analysis, present evidence that these activities demonstrate the hallmarks of goal pursuit, and discuss novel implications for understanding these behaviors. © 2015, © The Author(s) 2015.

Spielmann, S. S., Macdonald, G., Joel, S., & Impett, E. A. (2015). Longing for Ex-Partners out of Fear of Being Single. *Journal of Personality*.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84945945832&partnerID=40&md5=392bc66dbe2320b0a41c8d6049131cea.
This research investigated whether people who fear being single have a more difficult time letting go of ex-partners following a romantic breakup. Data were collected in a cross-sectional study (N=209, 64% women, Mage=30 years old) as well as a 1-month daily experience study of individuals who just went through a romantic breakup (N=117, 44% women, Mage=27 years old). Findings from both studies revealed that those with stronger fear of being single (Spielmann et al., 2013) reported greater longing for their ex-partners. Pre- to post-breakup analyses revealed that fear of being single increased after a breakup, regardless of who initiated the breakup. Within-day analyses revealed that longing for an ex-partner and attempts to renew the relationship were greater on days with stronger fear of being single. Lagged-day analyses provided support for the conclusion that fear of being single increased longing and renewal

attempts over time, but longing and renewal attempts did not influence fear of being single. These findings suggest that fear of being single is a particularly useful construct for understanding the romantic detachment process. © 2015 Wiley Periodicals, Inc.

Tobin, E. T., Kane, H. S., Saleh, D. J., Wildman, D. E., Breen, E. C., Secord, E., & Slatcher, R. B. (2015). Asthma-related immune responses in youth with asthma: Associations with maternal responsiveness and expressions of positive and negative affect in daily life. ***Psychosomatic Medicine, 77*****(8), 892-902.**
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84944128073&partnerID=40&md5=c5ae897ef504310848dac0ba35468297.
Objectives: Stressful family environments early in life have negative effects on physical health. However, less is known about the health effects of positive aspects of families. We examined the associations between maternal responsiveness and immune markers among youth with asthma and identified youth expressions of positive affect as a potentialmechanism of these associations. Methods: Forty-Three youths with asthma (26 boys; aged 10-17 years) wore the Electronically Activated Recorder for 4 days to assess maternal responsiveness and youth expressions of affect from audio-recordings of daily life. Trained coders rated Electronically Activated Recorder sound files for expressions of maternal responsiveness and affect displayed by the youth. Peripheral blood mononuclear cells were isolated, cultured, and assayed to determine stimulated levels of interleukin (IL)-5, IL-13, and interferon-γ. Results: Greater maternal responsiveness was associated with decreased stimulated production of IL-5 ($r = 0.38$, $p = .012$) and IL-13 ($r = 0.33$, $p = .031$). Greater total positive affect in youth was linked to decreased stimulated production of IL-5 ($r = 0.46$, $p = .002$) and IL-13 ($r = 0.37$, $p = .014$). Total negative affect among youth was unrelated to immune responses. There was a significant indirect effect of maternal responsiveness via positive affect in youth on lower levels of IL-5 (95% confidence interval = 3.41 to 0.03) and IL-13 (95% confidence interval = 2.34 to 0.01) when adjusting for caregiver-youth conflict and negative affect among youth. Conclusions: These results indicate the importance of positive family interactions for youth and provide preliminary evidence for a mechanism through which parenting can influence immune responses in youth with asthma. Copyright © 2015 by the American Psychosomatic Society.

Waller, R., Shaw, D. S., Neiderhiser, J. M., Ganiban, J. M., Natsuaki, M. N., Reiss, D., . . . Hyde, L. W. (2015). Toward an Understanding of the Role of the Environment in the Development of Early Callous Behavior. ***Journal of Personality*****.**
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84945541680&partnerID=40&md5=a0053f76c6b907c8674527b821ec10b7.
Key to understanding the long-term impact of social inequalities is identifying early behaviors that may signal higher risk for later poor psychosocial outcomes, such as psychopathology. A set of early-emerging characteristics that may signal risk for later externalizing psychopathology is callous-unemotional (CU) behavior. CU behavior predicts severe and chronic trajectories of externalizing behaviors in youth. However, much research on CU behavior has focused on late childhood and adolescence, with little attention paid to early childhood when preventative interventions may be most effective. In this article, we summarize our recent work showing that (a) CU behavior can be identified in early childhood using items from common behavior

checklists, (b) CU behavior predicts worse outcomes across early childhood, (c) CU behavior exhibits a nomological network distinct from other early externalizing behaviors, and (d) malleable environmental factors, particularly parenting, may play a role in the development of early CU behaviors. We discuss the challenges of studying contextual contributors to the development of CU behavior in terms of gene-environment correlations and present initial results from work examining CU behavior in an adoption study in which gene-environment correlations are examined in early childhood. We find that parenting is a predictor of early CU behavior even in a sample in which parents are not genetically related to the children. © 2015 Wiley Periodicals, Inc.

SOCIOLOGY

Christie-Mizell, C. A., Laster Pirtle, W. N., Tyndall, B. D., & Merolla, D. M. (2015). Race–gender differences in the impact of history of heavy drinking on current alcohol consumption during the transition to adulthood. *Journal of Sociology and Social Welfare, 42*(3), 137-158.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84944897323&partnerID=40&md5=46990933f5f2e681bcd0f6373d7dcc03.
American youth transitioning to adulthood consume more alcoholthan in any other period of the life course. This high level of consumptioncan result in serious consequences, including lost productivity, death and disability, sexual assault, and addiction.Nevertheless, relatively little is known, especially by race andgender, about how prior history of heavy drinking (e.g., in lateadolescence) impacts drinking in young adulthood. Utilizing datafrom the National Longitudinal Survey of Youth (1994-2004) forAfrican Americans, Latinos, and Whites (N = 2,300), we foundthat Whites and Latinos drink more than African Americans,and men report drinking more than women. However, accountingfor a history of heavy drinking introduces considerable variationin current drinking patterns by race–gender status. A historyof heavy drinking more than doubles the number of drinks consumedby African American women, putting their drinkinglevels on par with African American men and White women andraising their level of drinking above Latinas. Further, AfricanAmerican women's probability of heavy drinking becomes indistinguishable from that of African American men and Whitewomen, once accounting for a prior history of binge drinking. For Latinas with a history of heavy drinking, the probability ofbeing a current binge drinker is equal to Latinos and Whitemen and higher than African Americans and White women.

Fasenfest, D., & Simon, N. (2015). Dumbing and Numbing of the American Electorate. *Critical Sociology, 41*(7-8), 999-1002.
http://proxy.lib.wayne.edu/login?url=http://www.scopus.com/inward/record.url?eid=2-s2.0-84946043478&partnerID=40&md5=872b359a541f9adcb0ca5aba18281d53.
(No abstract available).