NONEXTENSIVE STATISTICAL MECHANICS
AND THERMODYNAMICS: BIBLIOGRAPHY *

July 14, 2021

GENERAL THEORY

Generalized entropy and thermostatistics: [1]
Connection to thermodynamics, ensembles and Jaynes’ information theory: [2–1648, 1650–1870, 1870–2354, 2354–2357]
H-theorem and irreversibility: [2358–2404]
Ehrenfest theorem, von Neumann equation: [3, 2405–2411]
Quantum statistics: [2412–2528]
Variational and perturbative methods; Bogolyubov inequality; Green functions; Path integral; Boltzmann equation: [2427, 2529–2625]
Langevin and Fokker-Planck equations: [2362–2383, 2385–2418, 2602–2605, 2607–2663, 2665–3105]
Fluctuation-dissipation, Nyquist and Onsager reciprocity theorems, Kubo’s linear response theory and Kramers-Kronig relation: [6, 3106–3127]
Poisson equation: [3128–3139]
Callen identity: [3140]
Ising transmissivity: [3141]
Classical equipartition principle: [3142–3144]
Connection with quantum uncertainty: [3145–3191]
Connection with Fisher information measure: [3192–3204]
Connection with ergodicity, nonlinear dynamical systems, self-organized criticality, cellular automata, fractals: [9, 64–72, 2498, 3205–3654]
Connection with general relativity, cosmology, dark energy, string theory: [3193, 3655–3798]
Connection with quantum groups and quantum mechanics: [3799–3847]
Connection with wavelets; Signal processing; EEG: [3848–3940]
Connection with quantum correlated many-body problems: [3941–3953]
Connection with the Gentile and the exclusion Haldane statistics: [3954–3957]
Connection with finite systems: [3106, 3954]
Rigorous results (generalized entropy and thermostatistics): [3209–3214, 3958–3963]
Integral transformations (Hilhorst and Prato formulae): [2416, 3106, 3964–3967]

ONE-BODY SYSTEMS

Two-level system: [1, 3968]
Harmonic and anharmonic oscillators: [1193–1208, 3962–3970]
Free particle: [3971, 3972]
Larmor precession: [2407]
Rigid rotator: [3966–3975]

*This regularly updated Bibliography (at http://tsallis.cat.cbpf.br/biblio.htm) contains 8557 articles from 15203 signing (co)authors. It does not address the vast existing literature addressing nonextensive thermodynamical anomalies, but only articles including at least one substantial relation with nonadditive entropies, nonextensive statistical mechanics and thermodynamics. It is a fairly complete listing whose classification and indexation are, however, only indicative.

**MANY-BODY SYSTEMS**

Ideal, classical gases, and other toy models: [3106–3142, 3964–3971, 3973–4031]
Independent spin paramagnet, Landau magnetism: [3805–3811, 4032–4039]
Black-body radiation and photonic systems: [4040–4094]
\( d = 1 \) Ising ferromagnet: [4095–4099]
\( d \geq 2 \) Ising and other ferromagnets: [3141, 4100–4142]
Infinite-range Ising ferromagnet: [4143]
Potts ferromagnet, Molecular field approximation: [3140, 4117–4147]
Percolation: [4148–4150]
Electron-phonon systems; tight-binding-like Hamiltonians; nanosystems; theoretical chemistry: [4151–4206]

**APPLICATIONS**

Self-gravitating systems, Stellar polytropes, Vlasov equation, Galaxies, Galaxy clusters: [2584, 3128, 3193, 4207–4367]
Lévy-like and correlated anomalous diffusion: [17, 2697, 2698, 2761–2804, 4368–4431, 4438–4444]
Turbulence; Granular matter; Visous fingering; Navier-Stokes equation; Boltzmann equation; Mossbauer effect: [3128, 4413–4439, 4445–4752]
Solar neutrinos; High energy physics: [4753–4971, 4973–5002, 5004–5355]
Ferrofluid-like materials, Lennard-Jones and other fluids: [4134, 5352, 5356–5378]
Solitons: [5379, 5380]
Plasma (electron velocity distribution, magnetohydrodynamics): [5381–5517, 5519–5876]
Glass, Spin-glass: [5877–5912]
Superfluid helium; Bose-Einstein condensation: [5913–5935]
Test of Boltzmann-Gibbs thermostatistics: [3660, 4063, 4064]
Cosmic rays; Elementary particles: [5315, 5936–6177]
Biological systems; Microemulsions; Liquid crystals: [6178–6297]
Stochastic resonance; Brownian motors: [6298–6323, 6325–6340]
Connection with the Theory of perceptions: [17, 18]
Connection with the Theory of finances: [6, 4446, 6319, 6331–6335, 6337–6359]
Consistent testing; Statistical inference; Theory of probabilities: [715–726, 728–771, 2580, 6541–6613]
Simulated annealing and optimization techniques; Monte Carlo (Genetics, Traveling salesman problem, Data fitting curves, Quantum chemistry, Gravity models, Lennard-Jones clusters, Thomson model, spin systems, proteins, nucleic acids): [2603, 4128, 6882–6920, 6922–7259]
Neural and other networks: [6258, 6259, 7260–7391]
Analysis of time series (nonlinear dynamics, epilepsy, earthquakes, economics) and images: [3848–3873, 7392–7661, 7663–7799, 7801–8021]
Geophysics: [3872, 3873, 7475, 8022–8104]
Medicine; Tomography: [3874–3881, 7392, 7393, 7714, 8105–8188]
Symbolic dynamics, linguistics, philology, cognitive sciences, hydrology, ecology: [3258–3286, 3290–3313, 6823, 8189–8206, 8208–8364]

**GENERAL READING**

Generalized thermostatistics; Generalized distributions: [660, 8365–8557]
References


T. Kobayashi, t-vMF Similarity for regularizing intra-class feature distribution, IEEE (2021), in press.


M. EL-Morshedy, F.S. Alshammari, A. Tyagi, I. Elbatal, Y.S. Hamed and M.S. Eliwa, Bayesian and frequentist inferences on a type I half-logistic odd Weibull generator with applications in engineering, Entropy 23, 446 (2021), doi: 10.3390/e23040446


A. Bravetti and D. Tapia, A thermostat algorithm generating target ensembles, preprint (2015), 1510.03942 [cond-mat.stat-mech].


E.M.F. Curado, Condiciones para a existencia de estatisticas generalizadas, communicated at the XX Encontro Nacional de Fisica da Materia Condensada (10-14 June 1997, Caxambu, Brazil).

[107] N.K. Kollas, Generalized entanglement in quantum information theory - Optimization free measures and faithful extraction protocols, Doctor Thesis (Physics Department, University of Patras, Greece, 2020).


A. Plastino and M.C. Rocca, q-Gamow states as continuous linear functionals on analytical test functions, preprint (2015), 1511.04010 [cond-mat.stat-mech].


[224] M.V. Jankovic, Quantum Tsallis entropy and projective measurement, preprint (2009), 0904.3794 [physics.data-an].


E.M.C. Abreu and J. Ananias Neto, Black holes thermodynamics from a dual Kaniadakis entropy, EPL 133, 49001 (2021), doi: 10.1209/0295-5075/133/49001


S. Srivastava and U. Sharma and V. Dubey, Modified cosmology through spacetime thermodynamics and Barrow horizon entropy, preprint (2021), 2101.00176 [gr-qc].


E.N. Saridakis, Modified cosmology through spacetime thermodynamics and Barrow horizon entropy, Journal of Cosmology and Astroparticle Physics, 031 (2020).

E.N. Saridakis, Barrow holographic dark energy, Phys. Rev. D 102, 123525 (2020).


A.Y. Shaikh, Diagnosing Renyi and Tsallis holographic dark energy models with Hubble’s horizon cutoff, preprint (2021), arxiv 2105.04411


[606] M.D. Correia and C. Tsallis, Calcolo numerico da funcao distribuicao de probabilidades marginais em estatistica nao extensiva para o hamiltoniano HMF, communicated at the 2nd Workshop of the National Institute of Science and Technology for Complex Systems (Rio de Janeiro, 1-5 March 2010).


[613] B. Atenas and S. Curilef, Relationship between the average kinetic energy and the temperature out of equilibrium, communicated at the Workshop on Statistical Physics, (Antofagasta, Chile, 19-20 December 2019).


L. Velazquez and F. Guzman, *Softening the extensive postulates*, preprint (2001) [cond-mat/0107441].


H. Touchette, *When is a quantity additive, and when is it extensive?*, Physica A 305, 84 (2002).


T. Dee Suwan, Towards thermodynamics of quantum systems away from equilibrium, Doctor Thesis (Department of Physics, Imperial College, London, 2016).


Q.A. Wang, L. Nivanen, M. Perezil and A. Le Mehaute, How to proceed with nonextensive systems at equilibrium?, preprint (2003) [cond-mat/0304178].


Q.A. Wang, A. Le Mehaute, L. Nivanen and M. Pezeril, Equilibrium or meta-equilibrium incomplete thermostatistics with different $q$ indices, preprint (2003) [cond-mat/0305398].

L. Nivanen, M. Pezeril, Q.A. Wang and A. Le Mehaute, Applying incomplete statistics to nonextensive systems with different $q$ indices, Chaos, Solitons and Fractals 24, 1337 (2005).


L. Knockaert, On scale and concentration invariance in entropies, Information Sciences 152, 139 (2003).


M. Baeten, Faseovergangen in eindige systemen, Master Thesis (Faculteit Wetenschappen, Departement Fysica, Universiteit Antwerpen, 2010).


V. Majernik, Entropy – A universal concept in sciences, Natural Science 6, 552-564 (2014), doi: http://dx.doi.org/10.4236/ns.2014.65055


D. Bussandri, L. Garro Linck, M. Re and P. Lamberti, Generalizacion de la divergencia de Jensen-Shannon a estadistica no extensiva para el analisis de secuencias [Nonextensive generalization of the Jensen-Shannon divergence for sequence analysis], Anales AFA 24 (2), 113-118 (2014).


[994] F. Topsoe, Interaction between truth and belief as the key to entropy and other quantities of statistical physics, preprint (2008), 0807.4337[math-phys].


[1014] L. Pan and Y. Deng, A new belief entropy to measure uncertainty of basic probability assignments based on belief function and plausibility function, Entropy 20, 842 (2018), doi: 10.3390/e20110842


[1085] T. Yamano, Generalized symmetric mutual information applied for channel capacity, preprint (2001) [cond-mat/0102922].


[1133] S. Umarov and C. Tsallis, Limit distribution in the q-CLT for q ≥ 1 can not have a compact support, preprint (2010), 1012.1814 [cond-mat.stat-mech].


[1140] H. Suyari and T. Wada, Multiplicative duality, q-triplet and (µ, ν, q)-relation derived from the one-to-one correspondence between the (µ, ν)-multinomial coefficient and Tsallis entropy S_q, Physica A 387, 71-83 (2007).


C. Vignat and A. Plastino, Density operators that extremize Tsallis entropy and thermal stability effects, Physica A 361, 139-160 (2006).


N. Chouaieb, B. Iannazzo and M. Moakher, Geometries on the cone of positive-definite matrices derived from the power potential and their relation to the power means, preprint (2021), 2102.10279 [math.DG].


B. Lavenda, Mean entropies, Open Systems and Information Dynamics 12, 289 (2005).


[1508] A.M. Mathai, Some recent results connecting many areas, communicated at the International Conference on Mathematical Sciences (3-5 January 2011, Pala-Kerala, India).


A. Plastino and M.C. Rocca, *From the hypergeometric differential equation to a non linear Schroedinger one*, preprint (2015), 1505.01334 [quant-ph].


[1684] G.P. Papaioannou, C. Dikaikos, A. Dramountanis, D.S. Georgiadis and P.G. Papaioannou, Using nonlinear stochastic and deterministic (chaotic tools) to test the EMH of two electricity markets; the case of Italy and Greece, preprint (2017), arxiv 1711.10552


G. Wilk and Z. Wlodarczyk, Example of the possible interpretation of Tsallis entropy, preprint (2008), 0711.3348 [cond-mat.stat-mech].


C. Song and S.T. Xia, Bayesian linear regression with Student-t assumptions, preprint (2016), 1604.04434 [cs.LG].


S. Abe, Instability of q-expectation value, preprint (2008), 0806.3934 [cond-mat.stat-mech].


[1803] T. Yamano, Universality of thermodynamical Legendre transform structure against the statistical entropy and the expectation value, Proceeding of the meeting on Quantum Theory of Thermo-field and its Applications, Soryushiron Kenkyu (Kyoto) 103, 104-107 (2001)[in Japanese].


A. Jencova and M.B. Ruskai, Classical small systems coupled to finite baths.

H. Hasegawa, Many faces of entropy or Bayesian statistical mechanics.


A.E. Rastegin, H. Li, Y. Xiong and Y. Li, When index of escort mean is different from nonextensive entropy index.


J.L. Du, On the power-law q-distribution function based on the probabilistically independent postulate in nonextensive statistics, preprint (2010), 1012.2765 [cond-mat.stat-mech].


T. Yamano, When index of escort mean is different from nonextensive entropy index, preprint (2010).


N. Ebrahimi, N.Y. Jalali and E.S. Soofi, Comparison, utility, and partition of dependence under absolutely continuous and singular distributions, Multivariate Analysis (2014), in press, doi: http://dx.doi.org/10.1016/j.mvna.2014.06.014


T. Oikonomou and G.B. Bagci, Overcoming the artificial biases for the nonadditive q-entropy, preprint (2018), 1810.06916 [cond-mat.stat-mech].


J. Korbel, Calibration invariance of the MaxEnt distribution in the maximum entropy principle, Entropy 23, 96 (2021), doi: 10.3390/e23010096


M. Campisi, Comment on “Tsallis power laws and finite baths with negative heat capacity”, preprint (2013), 1310.5556 [cond-mat.stat-mech].


P.F. Pessoa Macedo, Contributos para a teoria de maxima entropia na estimacao de modelos mal-postos [Contributions to the theory of maximum entropy estimation for ill-posed models], Doctor Thesis (Universidade de Aveiro, Departamento de Matematica, 2013).


G. Sommio and G. Steinbrecher, New class of generalized extensive entropies for studying dynamical systems in highly anisotropic phase space, preprint (2013), 1311.4790 [cond-mat.stat-mech].


[2129] N.P. Shah, Entropy maximisation and queues with or without balking, Doctor Thesis (School of Electrical Engineering and Computer Science Faculty of Engineering and Informatics, University of Bradford, 2014).
A box-covering Tsallis information dimension and non-extensive property of complex networks, Chaos, Solitons and Fractals 132, 109590 (2020).


W.S. Chung, On the $\mu(\beta)$-deformed statistical physics, preprint (2016).


F. Pavese, What can (partition) logic contribute to information theory?

A Tsallisian universe


G.B. Bagci and T. Oikonomou, Looking at the Tsallis entropy in the eye, Communication at the 14th Joint European Thermodynamics Conference (Budapest, May 21-25, 2017).


Financial market models


[2883] V. Svoboda, Generalized stochastic processes with applications to financial markets, Master Thesis (Czech Technical University in Prague, Faculty of Nuclear Sciences and Physical Engineering, Department of Physics, 2016).


[2896] F. Li, Modelling the stock market using a multi-scale approach, Master Thesis (University of Leicester, School of Management, University of Leicester, 2017).


[2927] D. Xu, Superstatistics and symbolic dynamics of share price returns on different time scales, Doctor Thesis (Queen Mary College, University of London, 2017).


A.A. Marinho and F.A. Brito, *Hybrid deformed algebra*


A. Kononovicius and V. Gontis, *On the probability distribution of stock returns in the Mike-Farmer model*.


A. Namdari and Z.S. Li, *An entropy-based approach for modeling lithium-ion battery capacity fade*, IEEE (2020).


S. Furuichi, Matrix trace inequalities on the Tsallis entropies, preprint (2010), 1001.1388 [cond-mat.stat-mech].


S. Kim, Operator entropy and fidelity associated with the geometric mean, Linear Algebra and its Applications 438, 2475-2483 (2013).


[3235] M. Proks, Analysis of financial time series, Doctor Thesis (Department of Physics, Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University, Prague, 2017).


[3332] A.M.C. de Souza, Estudos sobre o ensemble de Wishart-Tsallis de matrizes aleatorias, communicated at the 2nd Workshop of the National Institute of Science and Technology for Complex Systems (Rio de Janeiro, 1-5 March 2010).
None


A. Celikoglu, Dusuk-boyutlu yitimli dinamik sistemlerin kaos gesis esiginde entropi uretimi ve ilk kosullara baglili, Master Thesis (Ege University, Izmir, Turkey, 2007).


[3391] A. Prestes, Thermodynamic nonextensivity and elastoplasticity: Determining the Tsallis entropic index q for a SOC system by the multifractal function f(α), preprint (1999).


[3430] D. Moroni, Dinamica e termodinamica di un modello XY con lunghezza di interazione variabile, Tesi di Laurea (In Italian) (Università degli Studi di Roma La Sapienza, 1999).


[3434] D. Moroni, Dinamica e termodinamica di un modello XY con lunghezza di interazione variabile, Tesi di Laurea (In Italian) (Università degli Studi di Roma La Sapienza, 1999).


[3555] E. Mayoral and A. Robledo, Tsallis’ q index and Mori’s q phase transitions at edge of chaos, Phys. Rev. E 72, 026209 (2005).


[3868] M.H.A. Hassan *Quantifying heteroskedasticity metrics*, Doctor Thesis (Faculty of Science and Technology, Institute for Intelligent Systems Research and Innovation, Deakin University, Australia, 2016).


M. Dai, J. Zhang, C. Xie, L. Chen and F. Dai, Cross entropy and sliding time window based flight approach sequencing method, involves establishing flight approach sequencing mathematic model, and performing vehicle route planning and optimization process based on Tsallis cross entropy, Patent Number: CN110689765-A (2020).

F. Wang, F. Sun, D. Zhu, T. Liu, A. Li, K. Feng and X. Wang, Infrared polarization thermal image threshold segmenting method, involves performing connection detection on three rough segmentation to remove part of domain error divided region, and fusing three segmented images by region growing process, Patent Number: CN110232694-A (2019).


K. Fu, J. Qu, Y. Chai and T. Zou, Hilbert marginal spectrum analysis for automatic seizure detection in EEG signals, Biomedical Signal Processing and Control 18, 179-185 (2015).


Y.A. Pykh, Pairwise interactions origin of entropy functions, preprint (2015), 1506.05731


[4145] P.R. del Santoro, Aproximacao de campo molecular do modelo de Potts generalizado, Master Thesis (Universidade de Sao Paulo-Brazil, 1994).


[4263] Z. Chen and X. Xu, Multifractality can be a universal signature of phase transitions, preprint (2013), 1304.3189 [cond-mat.stat-mech].


N. Komatsu, Alternative dark energy from the holographic equipartition law with a modified Renyi entropy: A thermodynamic scenario for the cosmological constant problem, preprint (2016), 1611.04084 [gr-qc].


A. Nakamichi, T. Tatekawa and M. Morikawa, Statistical mechanics which describes the universe: SDSS galaxy distribution, N-body simulations, and void probability, preprint (2008).


[4348] W. Hurlimann, Benford’s law in scientific research, Internat. J. Scientific and Engineering Res. 6 (7), 143-148 (2015), ISSN 2229-5518
Z. Huang, G. Su, A. El Kaabouchi, Q.A. Wang and J. Chen,
M.A.F. dos Santos, G. Lucatelli, D. Prato and C. Tsallis,
Nonextensive foundation of Levy distributions
K.I. Hopcraft, E. Jakeman and R.M.J. Tanner,
D.H. Zanette and P.A. Alemany,
A.M.C. de Souza, M.R. Ubriaco,
C. Tsallis, A.M.C. de Souza and R. Maynard,
Nonextensive Bloch-Torrey equation
F. Michael, J.L. Wu and X.M. Huang,
Quasiequilibrium self-gravitating systems
K. Ourabah, E. Barkai and V.N. Fleurov,
A fractional diffusion equation to describe Levy flights
C.A. Condat, J. Rangel and Pedro W. Lamberti,
C.A. Condat and J. Rangel,
M.O. Caceres and C.E. Budde,
C. Tsallis, S.V.F Levy, A.M.C. de Souza and R. Maynard,
D.H. Zanette and P.A. Alemany,
L. Cheng, H. Ding, F. Yan, W. Zhang and E. Wang,
Thermodynamics of two particle system in anomalous diffusion,
preprint (2016), 1610.00596 [cond-mat.stat-mech].
P.A. Alemany and D.H. Zanette,
Fractal random walks from a variational formalism for Tsallis entropies,
C. Tsallis, A.M.C. de Souza and R. Maynard,
Derivation of Lévy-type anomalous superdiffusion from
D.H. Zanette and P.A. Alemany,
C. Tsallis, S.V.F Levy, A.M.C. de Souza and R. Maynard,
Statistical-mechanical foundation of the ubiquity of Levy distributions in nature,
M.O. Caceres and C.E. Budde, Comment on "Thermodynamics of anomalous diffusion",
D.H. Zanette and P.A. Alemany, Reply to Comment on "Thermodynamics of anomalous diffusion",
K.I. Hopcraft, E. Jakeman and R.M.J. Tanner, Lévy random walks with fluctuating step number and multiscale behavior,
M.R. Ubriaco, A simple mathematical model for anomalous diffusion via Fishers information theory,
A.N. Petridis, Levy-statistics for partially equilibrated systems,
C.A. Condat and J. Rangel, Anomalous diffusion in the non-asymptotic regime,
C.A. Condat, J. Rangel and Pedro W. Lamberti, Anomalous diffusion in the nonasymptotic regime,
A.M.C. de Souza, Sistemas estatisticos complexos e Mecanica estatistica nao extensiva,
A.S. Chaves, A fractional diffusion equation to describe Levy flights,
H. Hara and Y. Tamura, Dynamical process of complex systems and fractional differential equations,
E. Barkai and V.N. Fleurov, Levy walks and generalized stochastic collision models,
M. Buiatti, P. Grigolini and A. Montagnini, Dynamic approach to the thermodynamics of superdiffusion,
D. Prato and C. Tsallis, Nonextensive foundation of Levy distributions,

C. Budde, D. Prato and M. Re, Modelos desacoplados de caminatas aleatorias para superdifusion, Anales AFA 12, 6-11 (2000).


A. Robledo and J. Quintana, Anomalous transport, the renormalization group and optimization of entropy, Granular Matter 3, 29 (2001).


C. Vignat and A. Plastino, Geometric origin of probabilistic distributions in statistical mechanics, preprint (2005) [cond-mat/0503337].


A.K. Rajagopal and S. Abe, Lévy distribution in half space based on nonextensive statistical mechanics, preprint (2000) [cond-mat/0003304].


R. Kawahara and H. Nakanishi, Final states of the two dimensional electron plasma trapped in magnetic field, preprint (2005) [cond-mat/0509239].


[4428] F. Verheest, Comment on “Head-on collision of electron acoustic solitary waves in a plasma with nonextensive hot electrons”, preprint (2012), 1204.1478 [physics.space-ph].


[4842] ALICE Collaboration, Production of $\Sigma(1385)^{\pm}$ and $\Xi(1530)^0$ in p-Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV, Eur. Phys. J. C 77, 389 (2017) (17 pages), doi: 10.1140/epjc/s10052-017-4943-1.

[4843] ALICE Collaboration, $K^*(892)^0$ and $\Phi(1020)$ meson production at high transverse momentum in pp and Pb-Pb collisions at $\sqrt{s_{NN}} = 2.76$ TeV, Phys. Rev. C 95, 064606 (2017).


[4846] M. Faggin, Misura di elettroni da decadimenti di adroni con charm e beauty in collisioni Pb-Pb a LHC con ALICE, Thesis (Università degli Studi di Padova, Dipartimento di Fisica e Astronomia, 2017).


[4848] F.A.W. Hermsen, Go with the flow – Probing the strongest magnetic field in the Universe, Bachelor Thesis (Physics and Astronomy, Utrecht University, 2018).


Asymmetry in

S.Y.J.P. Hewage, Transverse momentum evolution of hadron-V^{0} correlations in pp collisions at \(\sqrt{s} = 7\) TeV, Doctor Thesis (Department of Physics, University of Houston, 2015).


K. Urmossy, T.S. Biro and G.G. Barnafoldi, Disentangling soft and hard hadron yields in PbPb collisions at \(\sqrt{s_{NN}} = 2.76\) ATeV, preprint, 1405.3963 [hep-ph].


G.S. Pradhan, D. Sahu, S. Deb and R. Sahoo, Hadron gas in the presence of a magnetic field using non-extensive statistics: A transition from diamagnetic to paramagnetic system, preprint (2021), 2106.14297 [hep-ph].


A.A. Bylinkin and A.A. Rostovtsev, Systematic studies of hadron production spectra in collider experiments, preprint (2010), 1008.0332 [hep-ph].


A.A. Bylinkin, N.S. Chernyavskaya and A.A. Rostovtsev, Two component model with collective flow for hadroproduction in heavy-ion collisions, Nuclear and Particle Physics Proceedings 273-275, 2590-2592 (2016).


Alice Collaboration, \(\pi^{0}\) and \(\eta\) meson production in proton-proton collisions at \(\sqrt{s} = 8\) TeV, Eur. Phys. J. C 78, 263 (2018).

ALICE Collaboration, Production of the \(p(770)^{0}\) meson in pp and Pb-Pb collisions at \(\sqrt{s_{NN}} = 2.76\) TeV, Phys. Rev. C 99, 064901 (2019).

E. Serradilla Rodriguez, Produccion de nucleos de deuterio y antideuterio en el experimento Alice del LHC, Doctor Thesis (Universidad Complutense de Madrid, 2014).

S. Papadopoulou, F. Antoniou, J.F. Esteban Muller, Y. Papaphillippou and G. Trad, Modelling and measurements of bunch profiles at the LHC flat bottom, Proceedings of IPAC2016, UTCTUPMW022 (Busan, Korea,19 May 2016).

K. Garg, \(K^{+}(892)^{0}\) resonance with the ALICE detector at LHC, Doctor Thesis (University of Catania, 2018).


[5032] ALICE Collaboration Production of Σ(1385)± and Ξ(1530)0 in p−Pb collisions at √sNN = 5.02 TeV, preprint (2017), 1701.07797 [nucl-ex].


[5042] T.S. Biro and Z. Neda, Dynamical stationarity as a result of sustained random growth, preprint (2016), 1611.06698 [cond-mat.stat-mech].
[5050] Yu. V. Kharlov (ALICE Collaboration), Physics with the ALICE experiment, Physics of Atomic Nuclei 76 (12), 1497-1506 (2013) [Elementary Particles and Fields-Experiment].
[5054] M.S. Kayl, Measurement of the charged particle density with the ATLAS detector: First data at $\sqrt{s}$ = 0.9, 2.36 and 7 TeV, Doctor Thesis (University of Amsterdam, 2016).


[5134] B. De, Non-extensive statistics and a systematic study of meson-spectra at LHC energy $\sqrt{s(NN)} = 2.76$ TeV, preprint (2014), 1408.5811 [nucl-th].
[5144] D. Rohrscheid and G. Wolschin, Charged-hadron production in the three-sources RDM at LHC energies, EPJ Web of Conferences 70, 00074 (2014) (13 pages), http://dx.doi.org/10.1051/epjconf/20147000074


A. Borissov, Production of S0 hyperons at LHC with ALICE, EPJ Web of Conferences 222, 02002 (2019).


S. Curilef, Mean field, long-range ferromagnets and periodic boundary conditions, Physica A 340, 201 (2004).


P.H. Yoon, Thermodynamic, non-extensive, or turbulent quasi-equilibrium for the space plasma environment, Entropy 21, 820; (2019), doi:10.3390/e21090820


[5492] H. Wang and J. Du, The ion acoustic solitary waves in the four component plasma with the two-temperature electrons following the Cairns-Tsallis distribution, preprint (2021), arxiv 2107.03931


Theoretical description based on general and exact nonextensive dispersion relations of plasma oscillation data and verification of new acoustic plasma waves, Phys. Plasmas 21, 092106 (2014) (5 pages).}


A. Esfandyari-Kalejahi and M. Afsari-Ghazi, New results from exact solution of the dispersion relation for nonextensive electron-ion plasma in the framework of collisionless kinetic theory, AIP Advances 9, 055303 (2019).

The nonextensive parameter for nonequilibrium plasmas in magnetic field, preprint (2014), 1403.1760 [physics.plasm-ph].


Solitary wave solution and dynamic transition of dust ion acoustic waves in a collisional nonextensive dusty plasma with ionization effect, Physica A 505, 18-34 (2018).


G. Wilk and Z. Wlodarczyk, Correlations from generalized thermodynamic uncertainty relations, Proceedings of Science (WPCF2011) 041 (2011) (6 pages) [The Seventh Workshop on Particle Correlations and Femtoscopy (University of Tokyo, September 20-24, 2011)].


T. Osada and G. Wilk, Causal dissipative hydrodynamics obtained from the nonextensive/dissipative correspondence, preprint (2008), 0810.5192 [nucl-th].


M. Sheraz, Modele GARCH si masuri ale entropiei in finante, Doctor Thesis (Romania, 2014)


D.R. Bickel, *Time-series intermittency quantified by generalized entropy: An alternative to multifractal analysis*, communicated at the "International Workshop on Classical and Quantum Complexity and Nonextensive Thermodynamics" (Denton, Texas, 3-6 April 2000).


Y. Kanzawa, *On possibilistic clustering methods based on Shannon/Tsallis-entropy for spherical data and categorical multivariate data*, Chapter Modeling


[6585] Z. Liu, Z. Han, Y. Zhang and Q. Zhang, Multiwavelet packet entropy and its application in transmission line fault recognition and classification, IEEE Transactions on Neural Networks and Learning Systems 25 (11), 2043-2052 (2014), doi: 0.1109/TNNLS.2014.2303086


[6590] D. Strzalka, Initial results of testing some statistical properties of hard disks workload in personal computers in terms of non-extensive entropy and long-range dependencies, Entropy 19, 335 (2017) (19 pages), doi: 10.3390/e19070335


[6611] A.S. Martínez, Fisica Matematica II Aulas 02-07 Modelagem Matematica, course (2020) [In Portuguese].


[6615] A.C. Sparavigna, Graphs of q-exponentials and q-trigonometric functions, HAL hal-01377262 (2016), doi: hal.archives-ouvertes.fr/hal-01377262


[6751] E. Marcon, Practical estimation of diversity from abundance data, (2015), HAL Id: hal-01212435 hal-agroparistech.archives-ouvertes.fr/hal-01212435


H. Suyari and T. Wada, *Multiplicative duality, q-triplet and (µ, ν, q)-relation derived from the one-to-one correspondence between the (µ,ν)-multinomial coefficient and Tsallis entropy S_q*, Physica A 387, 71-83 (2007).


B. Avinab, *Generalization of optoelectronic parameters with the configurational entropy of certain photon confining structures by the regulation of Tsallis factor using q-exponential integrals*, accepted for communication at the European Conference on Lasers, Optics and Photonics (2018).


J. Wang, X. Zhao, Q. Yu and C. Zhao, Inverse modeling of thermal decomposition of flame-retardant PET fiber with model-free coupled with particle swarm optimization algorithm, ACS Omega (2021), in press.


J. Wang, X. Zhao, Q. Yu and C. Zhao, Inverse modeling of thermal decomposition of flame-retardant PET fiber with model-free coupled with particle swarm optimization algorithm, ACS Omega (2021), in press.


J. Wang, X. Zhao, Q. Yu and C. Zhao, Inverse modeling of thermal decomposition of flame-retardant PET fiber with model-free coupled with particle swarm optimization algorithm, ACS Omega (2021), in press.


J. Wang, X. Zhao, Q. Yu and C. Zhao, Inverse modeling of thermal decomposition of flame-retardant PET fiber with model-free coupled with particle swarm optimization algorithm, ACS Omega (2021), in press.


J. Wang, X. Zhao, Q. Yu and C. Zhao, Inverse modeling of thermal decomposition of flame-retardant PET fiber with model-free coupled with particle swarm optimization algorithm, ACS Omega (2021), in press.


J. Wang, X. Zhao, Q. Yu and C. Zhao, Inverse modeling of thermal decomposition of flame-retardant PET fiber with model-free coupled with particle swarm optimization algorithm, ACS Omega (2021), in press.


J. Wang, X. Zhao, Q. Yu and C. Zhao, Inverse modeling of thermal decomposition of flame-retardant PET fiber with model-free coupled with particle swarm optimization algorithm, ACS Omega (2021), in press.


J. Wang, X. Zhao, Q. Yu and C. Zhao, Inverse modeling of thermal decomposition of flame-retardant PET fiber with model-free coupled with particle swarm optimization algorithm, ACS Omega (2021), in press.


J. Wang, X. Zhao, Q. Yu and C. Zhao, Inverse modeling of thermal decomposition of flame-retardant PET fiber with model-free coupled with particle swarm optimization algorithm, ACS Omega (2021), in press.


J. Wang, X. Zhao, Q. Yu and C. Zhao, Inverse modeling of thermal decomposition of flame-retardant PET fiber with model-free coupled with particle swarm optimization algorithm, ACS Omega (2021), in press.


J. Wang, X. Zhao, Q. Yu and C. Zhao, Inverse modeling of thermal decomposition of flame-retardant PET fiber with model-free coupled with particle swarm optimization algorithm, ACS Omega (2021), in press.


[6918] S. Atsawaraungsuk, Majority voting based on q-Gaussian activation function circular extreme learning machine, IEEE 9th International Conference on Knowledge and Smart Technology 56-60 (2017).


[6926] M.V. Jankovic, Quantum low entropy based associative reasoning – QLEAR learning, preprint (2017), arxiv 1705.10503


[7083] D.F.S. Machado, V.H.C. Silva, C.S. Esteves, R. Gargano, L.G.M. Macedo, K.C. Mundim and H.C.B. de Oliveira, *Fully relativistic rovibrational energies and spectroscopic constants of the lowest X\(:(1)0_{u}^{+}\), A\(:(1)2_{u}\) and A\(:(1)1_{u}\), B\(:(1)0_{u}^{+}\) and B\(:(1)0_{u}^{-}\) states of molecular chlorine*, J. Mol. Model. 18, 4343-4348 (2012).


V.A. Legkokonets, A.A. Vasilenko and M.M. Khasanov, Selection of optimal developing strategy for a group of prospects in terms of geological uncertainties and infrastructure constraints, OnePetro SPE-201985-MS (2020), doi: 10.2118/201985-MS


Y. Dagasan, Development of a grade control technique optimizing dilution and ore loss trade-off in lateritic bauxite deposits, Doctor Thesis (2018, Western Australian School of Mines).


M. Fleischer, Scale invariance and symmetry relationships in non-extensive statistical mechanics, preprint (2005) [cond-mat/0501293].


[7324] A.V. Kolesnichenko, *Jeans instability of the protoplanetary circumstellar disk taking into account the magnetic field and radiation in the nonextensive Tsallis kinetics*, (2021) [In Russian], doi: 10.20948/prepr-2021-4


Financial market dynamics

H. Rabal, L. Zunino, O. Rosso and N. Cap,

M. Beenamol, S. Prabavathy and J. Mohanalin,

O. Nicolis, J. Mateu and J.E. Contreras-Reyes,

A. Kowalski, M.T. Martin, A. Plastino and L. Zunino,

J. Chen and G. Li,

A.I. Olemskoi,

O. Sotolongo-Costa and A. Posadas,

F. Michael and M.D. Johnson,

C.E. Sanchez and P. Vega-Jorquera,

P. Wang, Z. Sun and W. Xu,

M.M. Santos and U.P.C. Neves,

J. Weberszpil and O. Sotolongo-Costa,

D. Rodriguez-Perez, O. Sotolongo-Grau, O. Sotolongo-Costa and J.C. Antoranz,

O.A. Rosso, M.T. Martin and A. Plastino,

M. Xu and P. Shang,

A.M. Kowalski, M.T. Martin, A. Plastino and L. Zunino,

Q. Guo, Z. Sun and W. Xu,

M. Tanaka, T. Watanabe and T. Mishima,

O.A. Rosso, M.T. Martin and A. Plastino,

M. Xu and P. Shang,

A.M. Kowalski, M.T. Martin, A. Plastino and L. Zunino,

O.A. Rosso, M.T. Martin and A. Plastino,


285


[7504] A.C. Sparavigna and R. Marazzato, Evaluation of GIMP retinex filtering of images by means of the Shen++ Max Shannon entropy finder, hal-01308434 (2016), hal.archives-ouvertes.fr/hal-01308434


J. Mohanalin, Beenamol, P.K. Kalra and N. Kumar, A novel automatic microcalcification detection technique using Tsallis entropy and a type II fuzzy index, Computers and Mathematics with Applications 60 (8), 2426-2432 (2010).


J.F. Ramirez-Villegas and D.F. Ramirez-Moreno, Wavelet packet energy, Tsallis entropy and statistical parameterization for support vector-based and neural-based classification of mammographic regions, Neurocomputing 77 (1), 82-100 (2012).


[7578] F. Nie, A three-level thresholding technique based on nonextensive entropy and fuzzy partition with artificial bee colony algorithm, Internat. J. Hybrid Information Technology 8 (7), 1-10 (2015), doi: http://dx.doi.org/10.14257/ijhit.2015.8.7.01


Alzheimer’s disease severity in the prospective dementia registry Austria (PRODEM), Clinical Neurophysiology 126, 505-513 (2015).


[7655] R.S. Sneddon, SNEDDON AND ASSOC INC (SNED-Non-standard), Data value measuring method for electro encephalography data, involves computing attribute for each data subset so that attribute is dependent on data in each subset and attribute is equal to variability of data in each data subset, Patent US2005159919-A1 (2005-540950).


[7670] M.M. DiStasio and C.T. Bock, Data packet collection and monitoring computer system for e.g. security system functions, has wireless access point and data collection platform provided to calculate entropy of determined estimate of received signal strength, Assignee: Syracuse Res. Corp., US2010226255-A1 (2010).


[7673] X. Bai, J. Chen and H. Li, Local corrosion detecting method for horizontal well sleeve in oil field, involves outputting sleeve local corrosion information in neuron network according to calculating result of input Tsallis wavelet energy entropy, Assignee: Harbin Inst Technology, CN101650327-A (2010).


297
Are all highly liquid securities within the same class?


[7812] L. Bai, L. Rossi, H. Bunke and E.R. Hancock, Attributed graph kernels using the Jensen-Tsallis q-differences, Lecture Notes in Computer Science 8724 LNAI, Issue PART 1, 99-114 (2014) [European Conference on Machine Learning and Knowledge Discovery in Databases, ECML PKDD 2014; Nancy; France; 15 September 2014 through 19 September 2014; Code 107499].


[7992] M. Yasuda, Fuzzy c-means clustering, entropy maximization, and deterministic and simulated annealing, Intec, Chapter 13 (20 pages), http://dx.doi.org/10.5772/48659


D. Koutsoyiannis, *The scaling properties in the distribution of hydrological variables as a result of the maximum entropy principle*, communicated at European Geosciences Union General Assembly (24-29 April 2005, Vienna).


[8040] M. Kumbhakar, K. Ghoshal and V.P. Singh, 
Renyi entropy and random walk hypothesis to study suspended sediment concentration, J. Hydrol. Eng., 22 (8), 04017027 (2017) (15 pages).

[8041] K. Ghoshal, M. Kumbhakar and V.P. Singh, 

[8042] M. Moazamnia and H. Bonakdari, 

[8043] Z.S. Khozani and H. Bonakdari, 

[8044] Z.S. Khozani and W.H.M.W. Mohtar, 

[8045] D. Koutsoyiannis, 

[8046] S.M. Papalexiou and D. Koutsoyiannis, 

[8047] K. Chochlaki and F. Vallianatos, 

[8048] G.C. Yalcin, P. Rabassa and C. Beck, 

[8049] A. Molini, G.G. Katul and A. Porporato, 

[8050] G. Poveda, 
Mixed memory, (non) Hurst effect, and maximum entropy of rainfall in the tropical Andes, Advances Water Resources 34, 243-256 (2011).

[8051] G. Poveda and H.D. Salas, 

[8052] M. Kretzschmar, G. Consolini, E. Amata, S. Savin and W. Macek, 

[8053] Z. Voros, M. Leitner, Y. Narita, G. Consolini, P. Kovacs, A. Toth and J. Lichtenberger, 
Probability density functions for the variable solar wind near the solar cycle minimum, J. Geophys. Res. - Space Physics 120 (18), 6152-6166 (2015).

[8054] R.L. Kaufmann and W.R. Paterson, 

[8055] M. Stepanova and E.E. Antonova, 

[8056] G.S. Franca, C.S. Vilar, R. Silva and J.S. Alcaniz, 

[8057] M. Ausloos and F. Petroni, 

[8058] M. Ausloos and F. Petroni, 

[8059] F. Petroni and M. Ausloos, 

[8060] K. Ivanova, H.N. Shirer, T.P. Ackerman and E.E. Clothiaux, 

[8061] G. Chisham and M.P. Freeman, 

[8062] O. Babalola, 

[8063] A.A. Chernyshov, M.M. Mogilevsky and B.V. Kozelov, 

[8064] K.R. Chernyshov, 


[8119] D. La Vecchia, L. Camponovo and D. Ferrari, Robust heart rate variability analysis by generalized entropy minimization, Computational Statistics and Data Analysis 82, 137-151 (2015).


[8189] Z. Huang, Conditional statistical physical properties in two-joint complex systems having long-range interactions, preprint (2013), 1306.1092 [cond-mat.stat-mech].

[8207] K. Toliias, Natural language processing with deep neural networks, Doctor Thesis (Cyprus University of Technology, Faculty of Engineering and Technology, 2020).


317


[8289] T. Pedron and M.F. Cornelio, Densidades de distribuciao de frequencias de velocidades de vento medio diario e rajadas maximas no Estado do Parana, communicated at the XVII Congresso Brasileiro de Meteorologia (Gramado-RS, 2012).


324

J.D. Farmer, M. Shubik and E. Smith, Economics: the next physical science, Physics Today (2005), in press.


E.P. Borges, Complexidade e mecanica estatistica nao extensiva, Ciencia Hoje 223 (Janeiro/Fevereiro 2006) [in Portuguese].


[8460] G.A. Casas, F.D. Nobre and E.M.F. Curado, New type of equilibrium distribution for a system of charges In a spherically-symmetric electric field, EPL 126, 10005 (2019).


327


C. Tsallis, ed., Virtual Special Issue on Soccer in Physics, Physica A (June 2014).


D. Gualtieri, Tsallis Entropy, Tikalon blog by Dev Gualtieri (October 29, 2014); http://tikalon.com/blog/blog.php?article=2014/Tsallis_entropy


C. Tsallis, News on non-Boltzmannian thermostatistical systems, Communication at the 14th Joint European Thermodynamics Conference (Budapest, May 21-25, 2017).


