

Full publication list 2022

Ralf Blossey
Unité de Glycobiologie Structurale et Fonctionnelle (UGSF)
Université de Lille, CNRS UMR 8576
Equipe “Computational Molecular Systems Biology”
50 Avenue de Halley
59658 Villeneuve d’Ascq
Tel : +33 3 62531731, email : ralf.blossey@univ-lille.fr
homepage : www.ugsf-umr-glycobiologie.univ-lille1.fr

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Publications

Articles in refereed journals

2022

- [118] D. Breoni, F.J. Schwarzendahl, R. Blossey, H. Löwen
A one-dimensional three-state run-and-tumble model with a ell cycle Eur. Phys. J. E **45**, 83 <https://doi.org/10.1140/epj/s10189-022-00238-7> (2022)
- [117] R. Blossey, R. Podgornik
Continuum theories of structured dielectrics
EPL **139**, 27002 (2022)
- [116] R. Blossey, R. Podgornik
Field theory of structured liquid dielectrics
Phys. Rev. Res. **4**, 023033 (2022)
- [115] D. Breoni, R. Blossey, H. Löwen
Brownian particles driven by spatially periodic noise
Eur. Phys. J. E **45**, 18 <https://doi.org/10.1140/epj/s10189-022-00176-4> (2022)

2021

- [114] D. Breoni, H. Löwen, R. Blossey
Active noise-driven particles under space-dependent friction in one dimension
Phys. Rev. E **103**, 052602 (2021)
- [113] H. Berthoumieux, G. Monet, R. Blossey
Dipolar Poisson models in a dual view
J. Chem. Phys. **155**, 024112 (2021)
- [112] F. Cleri, M.F. Lensink, R. Blossey
DNA Aptamers Block the Receptor Binding Domain at the Spike Protein of SARS-CoV-2
Front. Mol. Biosci. **8** :713003. doi : 10.3389/fmolb.2021.713003 (2021)

2020

- [111] A. Majee , M. Bier, R. Blossey, R. Podgornik
Charge symmetry broken complex coacervation
Phys. Rev. Res. **2**, 043417 (2020)

[110] H. Schiessel, R. Blossey
Pioneer transcription factors in chromatin remodeling : The kinetic proofreading view
Phys. Rev. E **101**, 040401(R) (2020)

[109] S.S. Mohapatra, A. Fioravanti, P. Vandame, C. Spriet, F. Pini, C. Bompard, R. Blossey, O. Valette, E.G. Biondi
Methylation-dependent transcriptional regulation of crescentin gene (creS) by GcrA in *Caulobacter crescentus*
Mol.Microbiology **114**, 127-139 (2020)

2019

[108] R. Blossey, H. Schiessel
Histone mark recognition controls nucleosome translocation via a kinetic proofreading mechanism : Confronting theory and high-throughput experiments
Phys. Rev. E **99**, 060401 (2019)

[107] R. Blossey, H. Schiessel
Chromatin remodelers as active Brownian dimers
J. Phys. A - Math. Theor. **52**, 085601 (2019)

[106] S. Buyukdagli, T. Alla-Nissila, R. Blossey
Comment on 'Nonlocal statistical field theory of dipolar particles in electrolyte solutions
J. Phys. Cond. Matter **31**, 078001 (2019)

[105] Y. Brissonnet, Y., C. Assailly, A. Saumonneau, J. Bouckaert, M. Maillason, C. Petitot, B. Roubinet, B. Didak, L. Landemarre, C. Bridot, R. Blossey, D. Deniaud, X.B. Yan, J. Bernard, C. Tellier, C. Grandjean, F. Daligault, S.G. Gouin
Multivalent Thiosialosides and Their Synergistic Interaction with Pathogenic Sialidases
Chem. Eur. J. **25**, 2358-2365 (2019)

2018

[104] T. Dumych, C. Bridot, S.G., M.F. Lensink, S. Paryzhak, S. Szunerits, R. Blossey, R. Bilvy, J. Bouckaert, E.M. Krammer
A Novel Integrated Way for Deciphering the Glycan Code for the FimH Lectin
Molecules **23**, 2794 (2018)

[103] G. Brysbaert, R. Blossey, M.F. Lensink
The Inclusion of Water Molecules in Residue Interaction Networks Identifies Additional Central Residues
Frontiers Mol. Biosc. **5**, 88 (2018)

[102] R. Blossey, A.C. Maggs
A fluctuation-corrected functional of convex Poisson-Boltzmann theory
J. Phys. A : Mathematical and Theoretical **51**, 385001 (2018)

[101] R. Blossey, H. Schiessel
The latest twists in chromatin remodeling
Biophysical Journal **114**, 2255-2261 (2018)

[100] F. Cleri, F. Landuzzi, R. Blossey
Mechanical evolution of DNA double-strand breaks in the nucleosome
PLoS Comput Biol. **14** e1006224 (2018)

2017

[99] R. Blossey, A.C. Maggs, R. Podgornik
Structural interactions in ionic liquids linked to higher-order Poisson-Boltzmann equations
Physical Review E **95**, 060602(R) (2017)

[98] R. Blossey
Nucleation of twisted and tubular states in chiral ribbons
Phys. Rev. E **96**, 032405 (2017)

2016

[97] G. Copie, F. Cleri, R. Blossey, M.F. Lensink
On the ability of molecular dynamics simulation and continuum electrostatics to treat interfacial water molecules in protein-protein complexes
Scientific Reports **6**, 38259 (2016)

[96] S. Buyukdagli, R. Blossey
Correlation-induced DNA adsorption on like-charged membranes
Physical Review E **94**, 042502 (2016)

[95] S. Buyukdagli, R. Blossey
Beyond Poisson-Boltzmann : fluctuations and fluid structure in a self-consistent theory
Journal of Physics : Condensed Matter **28**, 343001 (2016)

[94] J. de Ruyck, G. Brysbaert, R. Blossey, M.F. Lensink
Molecular docking as a popular tool in drug-design, an in silico travel
Advances and Applications in Bioinformatics and Chemistry **9**, 1-11 (2016)

[93] Y. Vandecan, E. Biondi, R. Blossey
Core oscillator model for Caulobacter crescentus
Physical Review E **93**, 062413 (2016)

2015

- [92] R.P. Singh, G. Brysbaert, M.F. Lensink, F. Cleri, R. Blossey
Kinetic proofreading of chromatin remodeling : from gene activation to gene repression and back
AIMS Biophysics **2**, 398-411 (2015)
- [91] G. Brysbaert, M.F. Lensink, R. Blossey
Regulatory motifs on ISWI chromatin remodelers : molecular mechanisms and kinetic proofreading
Journal of Physics : Condensed Matter **27**, 064108 (2015)
- [90] S. Buyukdagli, R. Blossey, T. Ala-Nissila
Ionic current inversion in pressure-driven polymer translocation through nanopores
Physical Review Letters, **114**, 088303 (2015)

2014

- [89] S. Buyukdagli, R. Blossey
Nonlocal and nonlinear electrostatics of a dipolar Coulomb fluid
Journal of Physics : Condensed Matter **26**, 285101 (2014)
- [88] S. Buyukdagli, R. Blossey
Dipolar correlations in structured solvents under nanoconfinement
Journal of Chemical Physics **140**, 234903 (2014)
- [87] O. Baumchen, L. Marquant, R. Blossey, A. Münch, B. Wagner, K. Jacobs
Influence of slip on the Rayleigh-Plateau rim instability in dewetting viscous films
Physical Review Letters **113**, 014501 (2014)

2013

- [86] R. Beaujois, F. Riquet, K. Cailliau, E. Browaeys-Poly, C. Russo, R. Blossey, D. Vicogne, M. Marin, A. Lescuyer-Rouseau, J.-P. Vilain, J.-F. Bodart
Ultrasensitive MAPK/ERK activation in absence of protein synthesis in Xenopus oocytes
MAP Kinase **1**, e2 (2013)
- [85] Y. Vandecan, R. Blossey
Self-regulatory gene : an exact solution for the gene gate model
Physical Review E **87**, 042705 (2013)

[84] Y. Vandecan, R. Blossey
Fokker-Planck description of single nucleosome repositioning by dimeric chromatin remodelers
Physical Review E **88**, 012728 (2013)

[83] R.P. Singh, R. Blossey, F. Cleri
Structure and mechanical characterization of DNA i-motif nanowires by molecular dynamics simulations
Biophysical Journal **105**, 2820-2831 (2013)

2012

[82] A.-M. Florescu, H. Schiessel, R. Blossey
Kinetic control of nucleosome displacement by ISWI/ACF remodelers
Physical Review Letters **109**, 118103 (2012)

[81] Y. Vandecan, R. Blossey
Stochastic description of single nucleosome repositioning by ACF remodelers
Physical Review E **85**, 061920 (2012)

[80] R. Blossey, J.-F. Bodart, A. Devys, T. Goudon, P. Lafitte
Signal propagation of the MAPK cascade in Xenopus oocytes : role of bistability and ultrasensitivity for a mixed problem
Journal of Mathematical Biology **64**, 1-39 (2012)

[79] B. Pfeuty, J.-F. Bodart, R. Blossey, M. Lefranc
A dynamical model of oocyte maturation unveils precisely orchestrated meiotic decisions
PLoS Computational Biology **8**, e1002329 (2012)

2011

[78] R. Blossey, H. Schiessel
Kinetic proofreading of chromatin remodeling : the case of ISWI/ACF
Biophysical Journal **101**, L30-L32 (2011)

[77] C. Lavelle, R. Blossey
Chromatin remodelling : why, when and how ?
FEBS Journal **278**, 3578 (2011)

[76] R. Blossey, H. Schiessel
The dynamics of the nucleosome : thermal effects, external forces, and ATP
FEBS Journal **278**, 3619-3632 (2011)

[75] A. Leray, C. Spriet, R. Blossey, Y. Usson, L. Heliot
Quantitative comparison of polar approach vs fitting method in time-domain

FLIM image analysis
Cytometry **79** A, 149-158 (2011)

2010

[74] F. Paillusson, R. Blossey
Slits, plates, and Poisson-Boltzmann theory in a local formulation of nonlocal electrostatics
Physical Review E **82**, 052501 (2010)

[73] F. Lapiere, P. Brunet, Y. Coffinier, V. Thomy, R. Blossey, R. Boukherroub
Electrowetting and droplet impalement experiments on superhydrophobic multiscale structures
Faraday Discussions **146**, 125-140 (2010)

[72] V. Aguié-Béghin, M. Molinari, A. Hambardzumyan, L. Foulon, Y. Habibi, T. Heim, R. Blossey, R. Douillard
Preparation of Ordered Films of Cellulose Nanocrystals
in 'Model Cellulosic Surfaces', Ch. 5, ACS Symposium Series 1019, 115-136 (2010)

2009

[71] F. Lapiere, V. Thomy, Y. Coffinier, R. Blossey, R. Boukherroub
Reversible electrowetting on superhydrophobic double-nanotextured surfaces
Langmuir **25**, 6551-6558 (2009)

[70] C. Russo, R. Beaujois, J.-F. Bodart, R. Blossey
Kicked by Mos and tuned by MPF-the initiation of the MAPK cascade in Xenopus oocytes
HFSP Journal **3**, 428-440 (2009)

[69] C. Russo, C. Giuraniuc, R. Blossey R, J.-F. Bodart
On the equilibria of the MAPK cascade : Cooperativity, modularity and bistability
Physica A **388**, 5070-5080 (2009)

[68] A. Dkhissi, G. Renvéz, R. Blossey
Y-DNA-melting : a short tale of three scales
Journal of Physics : Condensed Matter **21**, 034115 (2009)

[67] A. Dkhissi, J.M. Ducere, R. Blossey, C. Pouchan
Can the hybrid meta GGA and DFT-D methods describe the stacking interactions in conjugated polymers ?
Journal of Computational Chemistry **3**, 1179-1184 (2009)

2008

- [66] A. Dkhissi, R. Blossey
Meta-hybrid density functional theory and correlated ab-initio studies on micro-hydrated adenine-thymine base pairs
Journal of Physical Chemistry B **112**, 9182-9186 (2008)
- [65] R. Blossey, L. Cardelli, A. Phillips
Compositionality, stochasticity and cooperativity in dynamic models of gene regulation
HFSP Journal **2**, 17-28 (2008)
- [64] R. Blossey, H. Schiessel
Kinetic proofreading of gene activation by chromatin remodeling
HFSP Journal **2**, 167-170 (2008)
- [63] R. Blossey, C.V. Giuraniuc
Mean-field vs. stochastic models for transcriptional regulation
Physical Review E **78**, 031909 (2008)
- [62] R. Blossey
Thin film rupture and polymer flow (Invited Review)
Physical Chemistry - Chemical Physics **10**, 5177-5183 (2008)
- [61] M. Rauscher, R. Blossey, A. Münch, B. Wagner
Spinodal dewetting of thin films with large interfacial slip : implications from the dispersion relation
Langmuir **24**, 12290-12294 (2008)

2007

- [60] A. Dkhissi, R. Blossey
Performance of DFT/MPWB1K for stacking and H-bonding interactions
Chemical Physics Letters **439**, 35-39 (2007)
- [59] E. Carlon, A. Dkhissi, M. Lejard Malki, R. Blossey
Stability domains of actin genes and genomic evolution
Physical Review E **76**, 051916 (2007)
- [58] A. Hildebrandt, R. Blossey, S. Rjasanow, O. Kohlbacher, H.-P. Lenhof
Electrostatic potentials of proteins in water : a structured continuum approach
Bioinformatics **23** : e91-e98 (2007)
- [57] Y. Coffinier, S. Janel, A. Addad, R. Blossey, L. Gengembre, E. Payen, R. Boukherroub
Preparation of superhydrophobic silicon nanowire surfaces
Langmuir **23**, 1608-1611 (2007)

2006

- [56] R. Blossey, L. Cardelli, A. Phillips
A compositional approach to the stochastic dynamics of gene networks
Transact. Comput. Biology IV, 99-122, LNBI 3939-0099 (2006)
- [55] R. Blossey
Regulating chromatin : On code and dynamic models
European Physical Journal E **19**, 371-373 (2006)
- [54] S. Arscott, M. Gaudet, M. Brinkmann, A. E. Ashcroft, R Blossey
Capillary filling of miniaturised sources for electrospray mass spectrometry
Journal of Physics : Condensed Matter **18**, S677-S690 (2006)
- [53] M. Brinkmann, R. Blossey, L. Marcon, D. Stievenard, Y.F. Dufrêne, O. Melnyk
Fluidics of a Nanogap
Langmuir **22**, 9784-9788 (2006)

[52] R. Blossey, A. Münch, M. Rauscher, B. Wagner
Slip vs. viscoelasticity in dewetting thin films
European Physical Journal E **20**, 267-272 (2006)

[51] A. Münch, B. Wagner, M. Rauscher, R. Blossey
A thin-film model for corotational Jeffreys fluids under strong slip
European Physical Journal E **20**, 365-368 (2006)

2005

[50] E. Carlon, M. L. Malki, R. Blossey
Exons, Introns and DNA Thermodynamics
Physical Review Letters **94**, 178101 (2005)

[49] J. Bayer, R. Blossey, J. Rädler
Chains, Dimers and Sandwiches : Melting Behaviour of DNA Nanoassemblies
Nano Letters **5**, 497-501 (2005)

[48] M. Rauscher, A. Münch, B. Wagner, R. Blossey
A thin-film equation for viscoelastic liquids of Jeffreys type
European Physical Journal E **17**, 373-379 (2005)

[47] T. Heim, S. Preuss, B. Gerstmayer, A. Bosio, R. Blossey
Deposition from a drop : morphologies of unspecifically bound DNA
Journal of Physics : Condensed Matter **17**, S703-S716 (2005)

2004

[46] [M. Brinkmann, R. Blossey
Blobs, channels, and 'cigars' : liquid morphologies at a step
European Physical Journal E **14**, 79-89 (2004)

[45] M. Brinkmann, R. Blossey, S. Arscott, C. Druon, P. Tabourier, S. Le Gac,
C. Rolando
Microfluidic design rules for capillary slot-based electrospray sources
Applied Physics Letters **85**, 2140-2142 (2004)

[44] A. Hildebrandt, R. Blossey, S. Rjasanow, O. Kohlbacher, H.-P. Lenhof
Novel formulation of nonlocal electrostatics
Physical Review Letters **93**, 108104 (2004)

2003

[43] R. Blossey, E. Carlon
Reparametrizing loop entropy weights : effect on DNA melting
Physical Review E **68**, 06191 (2003)

[42] J. Becker, G. Grün, R. Seemann, H. Mantz, K. Jacobs, K.R. Mecke, R. Blossey
Complex dewetting scenarios captured by thin film models
Nature Materials **2**, 59-63 (2003)

[41] C. Neto, K. Jacobs, R. Seemann, R. Blossey, J. Becker, G. Grün
Correlated dewetting patterns in thin polystyrene films
Journal of Physics : Condensed Matter **15**, S421-S426 (2003)

[40] E. Schäffer, S. Harkema, M. Roerdink, R. Blossey, U. Steiner
Morphological instability of a confined polymer film in a thermal gradient
Macromolecules **36**, 1645-1656 (2003)

[39] E. Schäffer, S. Harkema, M. Roerdink, R. Blossey, U. Steiner
Thermomechanical lithography : pattern replication using a temperature-driven instability
Advanced Materials **15**, 514-517 (2003)

[38] Y. Meléan, D. Broseta, R. Blossey
Rate and wetting film effects on imbibition saturation profiles
Petroleum Science and Engineering **1078**, 1-10 (2003)

[37] Y. Meléan, D. Broseta, A. Hasmy, R. Blossey
Dispersion of imbibition fronts
Europhysics Letters **62**, 505-511 (2003)

[36] C. Neto, K. Jacobs, R. Seemann, R. Blossey, J. Becker, G. Grün
Satellite hole formation during dewetting : experiment and simulation
Journal of Physics : Condensed Matter **15**, 3355-3366 (2003)

[35] R. Blossey
Self-cleaning surfaces : virtual realities
Nature Materials **2**, 301-306 (2003)

2002

[34] R. Blossey, A. Lorke
Wetting droplet instability and quantum ring formation Physical Review E **65**,
021603 (2002)

[33] A. Lorke, R. Blossey, J.M. Garcia, M. Bichler, G. Abstreiter
*Morphological transformation of InGaAs islands fabricated by Stranski-Krastanov
growth*
Materials Science and Engineering B **88**, 225-229 (2002)

[32] R. Blossey
Hysteresis at first-order wetting transitions of 4-He on weak-binding substrates
Journal of Low Temperature Physics **126**, 355-360 (2002)

[31] R. Blossey, A. Bosio
Contact-line deposits and cDNA microarrays : a 'twin-spot' effect
Langmuir **18**, 2952-2954 (2002)

[30] E. Schäffer, S. Harkema, R. Blossey, U. Steiner
Temperature-gradient-induced instability in polymer films
Europhysics Letters **60**, 255-261 (2002)

2001

[29] R. Blossey
Effective forces between interfaces in type-I superconductors
Europhysics Letters **54**, 522-525 (2001)

[28] R. Seemann, K. Jacobs, R. Blossey
Polystyrene nanodroplets
Journal of Physics Condensed Matter **13**, 4915-4923 (2001)

[27] R. Blossey
Dimple-assisted dewetting : heterogeneous nucleation in undercooled wetting films
Annals of Physics (Leipzig) **10**, 733-775 (2001)

[26] R. Blossey
Vortices in metastable helium-4 films
in "Quantized Vortex Dynamics", C. Barenghi, W.F. Vinen (eds.), Springer New York, 421-427 (2001)

[25] D. Bonn, J. Meunier, E. Rolley, R. Bausch, R. Blossey
Effect of substrate roughness on wetting and adsorption
Physical Review Letters **87**, 27601 (2001)

2000

[24] H.T. Dobbs, R. Blossey
Capillary-wave effects at critical wetting in type-I superconductors
Physical Review E **61**, R6049-R6050 (2000)

[23] D. Bonn, E. Bertrand, J. Meunier, R. Blossey
Dynamics of wetting layer growth
Physical Review Letters **84**, 4661-4664 (2000)

[22] E. Montevecchi, R. Blossey
Heterogeneous hole nucleation in electron charged helium films
Physical Review Letters **85**, 4743-4746 (2000)

1999

[21] R. Blossey, C. Oligschleger
First-order wetting transition under gravity
Journal of Colloid and Interface Science **209**, 442-444 (1999)

[20] L. Latterini, R. Blossey, J. Hofkens, P. Vanoppen, F.C. de Schryver, A.E. Rowan, R.J.M. Nolte
Ring formation in evaporating porphyrin derivative solutions
Langmuir **15**, 3582-3588 (1999)

1998

[19] R. Blossey, T. Kinoshita, J. Dupont-Roc
Random-field Ising model for the hysteresis of the prewetting transition on a

disordered substrate
Physica A **248**, 247-272 (1998)

[18] R. Blossey, T. Kinoshita, X. Müller, J. Dupont-Roc
Discussion of a model for the prewetting transition of liquid helium on a disordered substrate
Journal of Low Temperature Physics **110**, 665-670 (1998)

[17] R. Blossey
Dimple-assisted dewetting in rotating superfluid films
Physical Review B **57**, R14808-R14812 (1998)

[16] R. Blossey
Dimple instability in a metastable superfluid film
Journal of Low Temperature Physics **113**, 779-805 (1998)

1997

[15] G. Foltin, R. Bausch, R. Blossey
Critical holes in undercooled wetting layers
Journal of Physics A **30**, 2937-2946 (1997)

1996

[14] R. Bausch, R. Blossey, G. Foltin
Decay of metastable states in wetting and dewetting transitions
Physica A **224**, 93-100 (1996)

[13] R. Blossey, J.O. Indekeu
Interface potential approach to surface states in type-I superconductors
Physical Review B **53**, 8599-8603 (1996)

1995

[12] R. Blossey, J.O. Indekeu
Diverging length scales near a first-order wetting transition
Physical Review E **52**, 1223-1226 (1995)

[11] R. Blossey
Nucleation at first-order wetting transitions (Invited Review)
International Journal of Modern Physics B **9**, 3489-3525 (1995)

1994

[10] R. Blossey, R. Bausch
Dynamics of first-order wetting transitions
Phase Transitions **50**, 113-122 (1994)

[9] R. Bausch, R. Blossey
On the decay of metastable states near a first-order wetting transition
Berichte der Bunsengesellschaft Physikalische Chemie **98**, 420-423 (1994)

[8] F. Schmid, R. Blossey
Spinodal phase separation in complex fluids
Journal de Physique II (France) **4**, 1195-1207 (1994)

[7] R. Bausch, R. Blossey
Lifetime of undercooled wetting layers
Physical Review E **50**, R1759-R1761 (1994)

[6] R. Bausch, R. Blossey, M.A. Burschka
Critical nuclei for wetting and dewetting
Journal of Physics A **27**, A1405 (1994)

1993

[5] R. Bausch, R. Blossey
Critical droplets near a first-order wetting transition
Physical Review E **48**, 1131-1135 (1993)

[4] M.A. Burschka, R. Blossey, R. Bausch
Macroscopic shape of critical droplets in first-order wetting transitions
Journal of Physics A **26**, L1125-L1129 (1993)

1992

[3] R. Bausch, R. Blossey
Critical droplets near coexistence of wet and nonwet surface states
Zeitschrift für Physik B **86**, 273-275 (1992) ; B 91, 134 (1993) (Erratum)

1991

[2] R. Blossey, M. Schick
Percolation thresholds near lower critical points
Physical Review A **44**, 1134-1138 (1991)

[1] R. Bausch, R. Blossey
Critical droplets in first-order wetting transitions
Europhysics Letters **14**, 125-129 (1991)

Unreviewed articles

R. Blossey, C. Russo, J.-F. Bodart
Modularity within the MAPK cascade network
in : Oncogene Proteins : New Research, A.H. Malloy, E.C. Carson (eds.), Nova Science Publishers, Hauppauge, NY (USA) (2008)

R. Blossey
Modeling the Cell Cycle of Caulobacter crescentus
in : Cell Cycle Regulation and Development in Alphaproteobacteria, E. Biondi, ed., Springer (2022)

Books

I have written four books. The first appeared in 2006 and is dedicated to applications of statistical physics to computational biology. This book has just been updated in a second edition in 2019. In 2012 I published a volume summarizing my research on wetting and thin films. In 2017, I published a book on chromatin, meant as an introduction to the field for biophysics graduates and researchers. My latest book is an (advanced) introduction to Poisson-Boltzmann theory.

*Computational Biology :
A Statistical Mechanics Perspective*, CRC Press (2006) ; 2nd edition (2019)

Thin liquid films : Dewetting and polymer flow, Springer (2012)

Chromatin : Structure, Dynamics, Regulation, CRC Press (2017)

Poisson-Boltzmann theory : an introduction, Springer (2023)

