

Curriculum vitae

Jan M. Baetens

Personalialia

Name	Jan Marcel Baetens
Gender	Male
Date of birth	23/05/1984
Place of birth	Sint-Amansberg, Belgium
Nationality	Belgian
Marital Status	Single
E-mail	Jan.Baetens@UGent.be

Education

University

2007 - 2012

Doctor of Applied Biological Sciences;

Dissertation: *Discrete spatio-temporal modelling paradigms for environmental processes: SWOT analysis, application portfolio and Lyapunovian stability analysis*;

Date: April 3, 2012;

Supervisor: prof. dr. B. De Baets

2006 - 2007

Third year of second cycle Bio-engineer in Land Management and Forestry, Ghent University, magna cum laude;

Master dissertation: *Hydrophysical characterization of stony soils in arid zones of Chile*;

Supervisors: prof. dr. ir. D. Gabriels and dr. ir. W. Cornelis

2005 - 2006

Second year of second cycle Bio-engineer in Land Management and Forestry, Ghent University, magna cum laude

2004 - 2005

First year of second cycle Bio-engineer in Land Management and Forestry, Ghent University, magna cum laude

2002 - 2004

First cycle Bio-engineer, Ghent University Ghent, magna cum laude

Primary and secondary education

1996 - 2002

Secondary school, Sint-Janscollege, Ghent, Belgium

1987 - 1996

Primary school, Vrije Basisschool Sint-Jozef, Lochristi, Belgium

Employment

October 2017 - Present

Assistant professor, Department of Data Analysis and Mathematical Modelling, Faculty of Bioscience Engineering, Ghent University.

September 2012 - September 2017

Post-doctoral assistant at the Research Unit Knowledge-Based Systems, Department of Mathematical Modelling, Statistics and Bioinformatics, Faculty of Bioscience Engineering, Ghent University.

August 2016 - July 2018

Post-doctoral researcher at the Department of Physics and Material Science, São Carlos Institute of Physics, Universidade de São Paulo (starting date depending on visa approval).

August 2014 - February 2015

Assistant professor at the University College Roosevelt, Utrecht University.

November 2009 - November 2011

Guest lecturer at the Anton De Kom University, Paramaribo, Suriname

September 2007 - September 2012

Full-time research and teaching assistant to prof. dr. Bernard De Baets at the Research Unit Knowledge-Based Systems, Department of Mathematical Modelling, Statistics and Bioinformatics, Faculty of Bioscience Engineering, Ghent University.

July 2005 - August 2005

Internship with the Flemish Land Agency, Ghent, Belgium

Teaching experience

Lectureships

Academic year 2021-2022: *Calculus and Analysis* (6 ECTS), *Calculus* (6 ECTS), *Linear Algebra and Calculus II* (5 ECTS), *Mathematics I* (6 ECTS), *Mathematics II* (6 ECTS), *Spatio-temporal models* (5 ECTS)

Academic year 2020-2021: *Calculus and Analysis* (6 ECTS), *Calculus* (6 ECTS), *Mathematics I* (6 ECTS), *Differential equations* (4 ECTS), *Spatio-temporal models* (5 ECTS)

Academic year 2019-2020: *Calculus and Analysis* (6 ECTS), *Calculus* (6 ECTS), *Differential equations* (4 ECTS), *Spatio-temporal models* (5 ECTS)

Academic year 2018-2019: *Calculus and Analysis* (6 ECTS), *Calculus* (6 ECTS), *Differential equations* (4 ECTS), *Modelling and Simulation 2: Partial Differential Equations in Practice* (5 ECTS)

Academic year 2017-2018: *Modelling and Simulation 2: Partial Differential Equations in Practice* (5 ECTS), *Advanced Engineering Mathematics* at the Anton De Kom University, Suriname (5 ECTS), *Computational Models* (5 ECTS)

Academic year 2016-2017 *Modelling and Simulation 2: Partial Differential Equations in Practice* (5 ECTS), *Advanced Engineering Mathematics* at the Anton De Kom University, Suriname (5 ECTS)

Academic year 2015-2016: *Modelling and Simulation 2: Partial Differential Equations in Practice* (5 ECTS), *Advanced Engineering Mathematics* at the Anton De Kom University, Suriname (5 ECTS), *Computational Models* (5 ECTS)

Academic year 2014-2015: *Modelling and Simulation 2: Partial Differential Equations in Practice* (5 ECTS), *Advanced Engineering Mathematics* at the Anton De Kom University, Suriname (5 ECTS), *Mathematical Ideas and Methods in Context*, University College Roosevelt, Utrecht University (7.5 ECTS), *Introduction to Computer Science and Programming*, University College Roosevelt, Utrecht University (7.5 ECTS), *Topics in Computer Science*, University College Roosevelt, Utrecht University (7.5 ECTS)

Academic year 2013-2014: *Modelling and Simulation 2: Partial Differential Equations in Practice* (5 ECTS), *Advanced Engineering Mathematics* at the Anton De Kom University, Suriname (5 ECTS), *Computational Models* (5 ECTS)

Assistantships

Academic year 2012-2013: *Advanced Engineering Mathematics* at the Anton De Kom University, Suriname (5 ECTS), *Differential Equations* (5 ECTS)

Academic year 2011-2012: *Differential Equations* (5 ECTS), *Computational Techniques* (5 ECTS)

Academic year 2010-2011: *Advanced Engineering Mathematics* at the Anton De Kom University, Suriname (5 ECTS), *Differential Equations* (5 ECTS)

Academic year 2009-2010: *Advanced Engineering Mathematics* at the Anton De Kom University, Suriname (5 ECTS), *Differential Equations* (5 ECTS), *Differential and Integral Calculus* (6 ECTS), *Computational Techniques* (5 ECTS)

Academic year 2008-2009: *Differential Equations* (5 ECTS), *Differential and Integral Calculus* (6 ECTS)

Academic year 2007-2008: *Differential Equations* (5 ECTS), *Differential and Integral Calculus* (6 ECTS), *Computational Techniques* (5 ECTS)

Tutorship master and bachelor theses

- [1] Een onderzoek naar de bijdrage van wiskundige modellen ter bepaling van invasiesucces. Bachelor thesis, Academic year 2021-2022 (Wout Barbier, Marthe Cressato, Nicolaas Van der Burght, Roos Van Elsen).
- [2] Natuurbranden in België: een kijk op het verleden, een blik op de toekomst. Bachelor thesis, Academic year 2020-2021 (Aurélië Vandebussche, Gust Noens, Jonathan Debeuckelaere, Wietse Chanet).
- [3] Moisture dynamics of bio-based building materials as life-determining parameter (Salah Omar). Master thesis, 2019-2020, supervisor.
- [4] How do temperature-nitrate interactions shape the sensitivity of a brown seaweed to global warming? (Laura Van Waerebeek). Master thesis, 2019-2020, supervisor.
- [5] Aanpassen of sterven in een veranderende leefomgeving. Bachelor thesis, Academic year 2019-2020 (Lukas De Pauw, Luca Vergauwen, Milan Willems).

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- [6] Rukken ook natuurbranden op in Europa als gevolg van een veranderend klimaat? Bachelor thesis, Academic year 2019-2020 (Timothy Godts, Roos Gyselinck, Jari Strobbe, Lukas Willems).
- [7] Cellular automata for simulating water transport in variably saturated soil (Timon De Nood). Master thesis, 2017-2018, supervisor.
- [8] Spatially discrete modelling of run-off in the catchment area of the Hertsbergebeek (Ilja Van Bever). Master thesis, 2017-2018.
- [9] Hernieuwbare bouwmaterialen: op naar een duurzame bouwsector (Anna, Robays, Maarten, Vancaeyzeele, Paulien, Vandekeybus, Rita Verstraeten). Bachelor thesis, 2017-2018.
- [10] Myxomatosis in Belgium: a model-based reconstruction (Kobe Coorevits). Master thesis, 2016-2017, supervisor.
- [11] Individual-based modelling of competition and coexistence in microbial communities (Ward Quaghebeur). Master thesis 2016-2017, supervisor.
- [12] Towards a Belgian real-time wildfire simulator (Lander De Visscher). Master thesis, 2016-2017, supervisor.
- [13] Intransitive competition within a multispecies community (Zeno Van Moerkerke). Master thesis, 2016-2017, supervisor.
- [14] Een SWOT-analyse van individu-gebaseerde modellen voor de bio-ingenieurswetenschappen (Hans Brokken, Jonas De Backer, Cédric Schindfessel, Cedric Stroobandt).. Bachelor thesis, 2016-2017, supervisor.
- [15] Spatio-temporele modellering van filterkoekvorming bij filtratieprocessen. Master thesis, Academic year 2015-2016 (Bram De Jaegher).
- [16] Natuurbranden in België: een risico-analyse. Master thesis, Academic year 2015-2016 (Arthur Depicker).
- [17] Insluiten van een tijdsgeïntegreerde Brownse brug in een migratiemodel. Master thesis, Academic year 2015-2016 (Sofie Vriens).
- [18] Movement analysis of three eagle-owl breeding pairs in Limburg, The Netherlands. Bachelor thesis, Academic year 2014-2015 (Maud Van Stijn).
- [19] Non-deterministic cyclic competition. Master thesis, Academic year 2014-2015 (Tim Depraetere).
- [20] Enhanced spatio-temporal modelling of basal water flow beneath ice sheets. Master thesis, Academic year 2013-2014 (Anton Gistelincx).

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- [21] Stabiliteit en evenwicht van discrete spatio-temporele modellen. Master thesis, Academic year 2013-2014 (Wouter Van der Meeren).
- [22] Ruimtelijke modellering van filterkoekvorming in membraanbioreactoren. Master thesis, Academic year 2013-2014 (Michael Ghijs).
- [23] Een experimentele studie van gekoppelde, niet-lineaire chemische oscillatoren. Master thesis, Academic year 2013-2014 (Ruben Van de Vijver).
- [24] Een Europese bosbrandsimulator: naar een meer efficiënte bestrijding van bosbranden in Europa? Bachelor thesis, Academic year 2013-2014 (Dries Loncke, Tine Vergote, Manoëlle Verschueren, Karel Vlaeminck).
- [25] In silico kweken van schimmels. Bachelor thesis, Academic year 2013-2014 (Bieke Ostyn, Sara Krekels, Jeroen van Malderen, Laurenz De Cock).
- [26] Ruimtelijk discrete modellering van natuurbranden. Master thesis, Academic year 2012-2013 (Aäron Keunen).
- [27] Kennisgedreven modellering van natuurlijke migratiefenomenen. Master thesis, Academic year 2012-2013 (Niels Vanheuverbeke).
- [28] Migratie van dieren: een fascinerend fenomeen. Bachelor thesis, Academic year 2011-2012 (Sophie Balemans, Sofie Baeyens, Brecht D'hont, Anton Gistelinc).
- [29] Parametrisatie van een ruimtelijk expliciet model CASIR. Master thesis, Academic year 2010-2011 (Lien Eyerman).
- [30] Ontwikkeling en toepassing van een ruimtelijk expliciet en dynamisch model van snoek in rivieren. Master thesis, Academic year 2010-2011 (Steffie Van Nieuland).
- [31] Modelleren van mycelium netwerken in complexe esubstraten. Master thesis, Academic year 2010-2011 (Denis De Wilde).
- [32] Onregelmatige cellulaire automaten: een nieuwe wending voor biofilmmodellering? Bachelor thesis, Academic year 2009-2010 (Steffie Pardaens, Sandra Steyaert, Rosanne Thierens).
- [33] Modellering van chemische processen met behulp van cellulaire automaten. Master thesis, Academic year 2009-2010 (Pieter Van der Weeën).
- [34] Cellulaire automaten: op weg naar een realistische spatio-temporele modellering? Bachelor thesis, Academic year 2008-2009 (Alexander Christiaen, Arne Bruyneel, Lien Eyerman, Neil Saad).

Scientific output

Publications in international journals (ISI journals)

- [1] L. De Ligne, A. De Muynck, J. Caes, J.M. Baetens, B. De Baets, L. Van Hoorebeke, J. Van Acker, and J. Van den Bulcke. Studying the spatio-temporal dynamics of wood decay with x-ray ct scanning. *Holzforschung*, 76(5):408–420, 2022.
- [2] L. De Ligne, J. Van Acker, J.M. Baetens, S. Omar, B. De Baets, L. Thygesen, J. Van den Bulcke, and E.E. Thybring. Moisture dynamics of wood-based panels and wood fibre insulation materials. *Frontiers in Plant Science*, 13:17, 2022.
- [3] N. Rosa da Silva, V. Deklerck, J.M. Baetens, J. Van den Bulcke, M. De Ridder, M. Rousseau, O. Martinez Bruno, H. Beeckman, J. Van Acker, B. De Baets, and J. Verwaeren. Improved wood species identification based on multi-view imagery of the three anatomical planes. *Plant Methods*, 18(1):17, 2022.
- [4] J. Vandermaesen, S. Du, J.M. Baetens A.J. Daly, B. Horemans, B. De Baets, N. Boon, and D. Springael. Interspecies interactions of the 2,6-dichlorobenzamide degrading aminobacter sp. msh1 with resident sand filter bacteria : indications for mutual cooperative interactions that improve bam mineralization activity. *Environmental Science & Technology*, 56(2):1352–1364, 2022.
- [5] M. Vispoel, A.J. Daly, and J.M. Baetens. Progress, gaps and obstacles in the classification of cellular automata. *Physica D - Nonlinear Phenomena*, 432:30, 2022.
- [6] T.W. Alleman, J. Vergeynst, L. De Visscher, M. Rollier, D. Illana, E. Torfs, I. Nopens, and J.M. Baetens. Assessing the effects of non-pharmaceutical interventions on sars-cov-2 transmission in belgium by means of an extended seiqrd model and public mobility data. *Epidemics*, 37:14, 2021.
- [7] D. Avila-Alonso, J.M. Baetens, R. Cardenas, and B. De Baets. Oceanic response to the consecutive hurricanes dorian and humberto (2019) in the sargasso sea. *Natural Hazards and Earth System Sciences*, 21(2):837–859, 2021.
- [8] A.J. Daly, N. De Meester, J.M. Baetens, T. Moens, and B. De Baets. Untangling the mechanisms of cryptic species coexistence in a nematode community through individual-based modelling. *Oikos*, 130(4):587–600, 2021.
- [9] L. De Ligne, J. Van den Bulcke, J.M. Baetens, B. De Baets, G. Wang, I. De Windt, H. Beeckman, and J. Van Acker. Unraveling the natural durability of wood : revealing the impact of decay-influencing characteristics other than fungicidal components. *Holzforschung*, 75(4):368–378, 2021.

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- [10] A. Dzedzej, B. Wolnik, A. Nenca, J.M. Baetens, and B. De Baets. Two-dimensional rotation-symmetric number-conserving cellular automata. *Information Systems*, 577:599–621, 2021.
- [11] S. Vandepitte, T. Alleman, I. Nopens, J.M. Baetens, S. Coenen, and D. De Smedt. Cost-effectiveness of covid-19 policy measures : a systematic review. *Value in Health*, 24(11):1551–1569, 2021.
- [12] D. Avila-Alonso, J.M. Baetens, R. Cardenas, and B. De Baets. Oceanic response to hurricane irma (2017) in the exclusive economic zone of cuba and the eastern gulf of mexico. *Ocean Dynamics*, 70:603–619, 2020. IF2018 1.869, 31/66.
- [13] D. Avila-Alonso, J.M. Baetens, R. Cardenas, and B. De Baets. Spatio-temporal variability of oceanographic conditions in the exclusive economic zone of cuba. *Journal of Marine Systems*, 212:23, 2020.
- [14] W. Bołt, J.M. Baetens, and B. De Baets. Identification of cellular automata based on incomplete observations with bounded time gaps. *IEEE Transactions on Cybernetics*, 50:971–984, 2020. IF 10.387, 1/62.
- [15] H.P. Botter-Kuisch, J. Van den Bulcke, J.M. Baetens, and J. Van Acker. Cracking the code: real-time monitoring of wood drying and the occurrence of cracks. *Wood Science and Technology*, 54:1029–1049, 2020.
- [16] A.D. Daly, M. Stock, J.M. Baetens, and B. De Baets. Guiding mineralization co-culture discovery using bayesian optimization. *Environmental Science and Technology*, 52:14459–14469, 2020. IF2018 7.149, 14/251.
- [17] A. Depicker, B. De Baets, and J.M. Baetens. Wildfire ignition probability in belgium. *Natural Hazards and Earth Systems Sciences*, 20:363–376, 2020. IF2018 2.883, 21/91.
- [18] A. Dzedzej, B. Wolnik, A. Nenca, J.M. Baetens, and B. De Baets. Efficient enumeration of three-state two-dimensional number-conserving cellular automata. *Information and Computation*, 274:14, 2020.
- [19] N. Muyinda, J.M. Baetens, B. De Baets, and S. Rao. Using intransitive triads to determine the final species richness of competition networks. *Physica A*, 540:123249, 2020. IF2018 2.500, 26/81.
- [20] J. Reubens J.M. Baetens J. Coeck T. Moens S. Bruneel, P. Verhelst and P. Goethals. Quantifying and reducing epistemic uncertainty of passive acoustic telemetry data from longitudinal aquatic systems. *Ecological Informatics*, 59:16, 2020.

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- [21] B. Wolnik, A. Nenca, J.M. Baetens, and B. De Baets. A split-and-perturb decomposition of number-conserving cellular automata. *Physica D-Nonlinear Phenomena*, 413:12, 2020.
- [22] D. Avila-Alonso, J.M. Baetens, R. Cardenas, and B. De Baets. The impact of hurricanes on biogeochemical indicators of the exclusive economic zone of cuba. *Remote Sensing of Environment*, 233:111339, 2019. IF2018 8.218, 7/251.
- [23] W. Bołt, A. Bołt, B. Wolnik, J.M. Baetens, and B. De Baets. A statistical approach to the identification of diploid cellular automata based on incomplete observations. *Biosystems*, 186:103976, 2019. IF2018 2.500, 26/81.
- [24] A.D. Daly, W. Quaghebeur, T.D.M. Depraetere, J.M. Baetens, and B. De Baets. Lattice-based versus lattice-free individual-based models: impact on coexistence in competitive communities. *Natural Computing*, 18:855–864, 2019. IF2018 1.330, 53/105.
- [25] L. De Ligne, G. Vidal-Diez de Ulzurrun, J.M. Baetens, J. Van den Bulcke, J. Van Acker, and B. De Baets. Analysis of spatio-temporal fungal growth dynamics under different environmental conditions. *IMA Fungus*, 10:7, 2019. IF2018 4.333, 5/29.
- [26] M. Dembowski, B. Wolnik, W. Bołt, J.M. Baetens, and B. De Baets. Two-dimensional affine continuous cellular automata solving the relaxed density classification problem. *Journal of Cellular Automata*, 14:191–212, 2019. IF2018 0.776, 84/105.
- [27] A. Dzedzej, B. Wolnik, M. Dziemianczuk, N. Nenca, J.M. Baetens, and B. De Baets. A two-layer representation of four-state reversible number-conserving 2d cellular automata. *Journal of Statistical Mechanics: Theory and Experiment*, 2019:073202, 2019. IF2018 2.371, 6/55.
- [28] A. Dzedzej, B. Wolnik, A. Nenca, J.M. Baetens, and B. De Baets. Efficient enumeration of three-state two-dimensional number-conserving cellular automata. *Information & Computation*, page 17, 2019. IF2018 0.830, 176/254.
- [29] G.H.B. Miranda, J.M. Baetens, N. Bossuyt, B. De Baets, and O. Bruno. Real-time prediction of influenza outbreaks in belgium. *Epidemics*, 28:100341, 2019. IF2018 3.239, 31/89.
- [30] S. Van Nieuland, J.M. Baetens, R. Janssen, and B. De Baets. A validated expert-based habitat suitability map for Eagle Owls in Limburg, the Netherlands. *European Journal of Wildlife Research*, 66:48, 2019. IF2018 1.184, 80/170.

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- [31] A. Augustynowicz, J.M. Baetens, B. De Baets, A. Dzedzej, A. Nencan, and B. Wolnik. A note on reversibility of 2D cellular automata on hexagonal grids. *Journal of Cellular Automata*, 13:521–525, 2018. IF 0.776, 92/105.
- [32] J.M. Baetens and J. Gravner. Introducing Lyapunov profiles of cellular automata. *Journal of Cellular Automata*, 13:267–286, 2018. IF2016 0.696, 79/100.
- [33] A. Daly, J.M. Baetens, and B. De Baets. Ecological diversity: measuring the unmeasurable. *Mathematics*, 6:119, 2018. IF 1.105, 75/134.
- [34] A. Daly, J.M. Baetens, J. Vandermaesen, N. Boon, D. Springael, and B. De Baets. Individual-based modelling of invasion in bioaugmented sand filter communities. *Processes*, 6:PR6010002, 2018. IF 1.963, 69/138.
- [35] M. Dembowski, B. Wolnik, W. Bött, J.M. Baetens, and B. De Baets. Affine continuous cellular automata solving the fixed-length density classification problem. *Natural Computing*, 17:467–477, 2018. IF 1.330, 53/105.
- [36] T. Depraetere, A. Daly, J.M. Baetens, and B. De Baets. Three-species competition with non-deterministic outcomes. *Chaos*, 28:123124, 2018. IF 2.643, 19/254.
- [37] Z.S. Ladin, S. Van Nieuland, Adalsteinsson S.A., V. D’Amico, J.L. Bowman, J.J. Buler, J.M. Baetens, De Baets, and W.G. Shriver. Differential post-fledging habitat use of nearctic-neotropical migratory birds within an urbanized landscape. *Movement Ecology*, 6:19, 2018. IF 3.745, 37/165.
- [38] S. Naessens, B. De Jaegher, L. Vandewalle, K. Van Geem, J.M. Baetens, and I. Nopens. Impact of a helical ridge within a tubular membrane channel on fluid flow and particle behaviour: a model-based analysis. *Industrial & Engineering Chemistry Research*, 57:15586–15596, 2018. IF 3.375, 33/138.
- [39] S. Schumann, Z.S. Ladin, J.M. Baetens, and I. Hiltbold. Navigating on a chemical radar: Usage of root exudates by foraging *diabrotica virgifera virgifera* larvae. *Journal of Applied Entomology*, 142:911–920, 2018. IF 1.827, 25/98.
- [40] S. Van Nieuland, J.M. Baetens, R. Janssen, and B. De Baets. Habitat characteristics of possible hunting grounds of the eurasian eagle owl in limburg, the netherlands. *Ardea*, 106:147–162, 2018. IF 1.125, 12/28.
- [41] D. Avila-Alonso, J.M. Baetens, R. Cardenas, and B. De Baets. Assessing the effects of ultraviolet radiation on the photosynthetic potential in archean marine environments. *International Journal of Astrobiology*, 16:271–279, 2017. IF2016 1.598, 41/85.

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- [42] D. Avila-Alonso, J.M. Baetens, R. Cardenas, and B. De Baets. Modelling the effect of ultraviolet radiation on the photosynthetic potential of prochlorococcus and synechococcus cyanobacteria. *Aquatic Microbial Ecology*, 79:149–164, 2017. IF 1.921, 34/85.
- [43] N.R. da Silva, M. De Ridder, J.M. Baetens, J. Van den Bulcke, M. Rousseau, O.M. Bruno, H. Beeckman, J. Van Acker, and B. De Baets. Automated classification of wood transverse cross-section micro-imagery from 77 commercial central-african timber species. *Annals of Forest Science*, 74:30, 2017. IF 2.357, 14/66.
- [44] L.C. de S.M. Ozelim, A.L.B. Cavalcante, and J.M. Baetens. On the iota-delta function: a link between cellular automata and partial differential equations for modeling advection - dispersion from a constant source. *Journal of Supercomputing*, 73:700–712, 2017. IF 1.532, 44/103.
- [45] S. Van Nieuland, J.M. Baetens, H. De Meyer, and B. De Baets. An analytical description of the time-integrated Brownian bridge. *Journal of Computational and Applied Mathematics*, 36:627–645, 2017. IF2015 1.294, 55/254.
- [46] G. Vidal-Diez de Ulzurrun, J.M. Baetens, J. Van den Bulcke, and B. De Baets. Modelling three-dimensional fungal growth in response to environmental stimuli. *Journal of Theoretical Biology*, 414:35–49, 2017. IF 1.833, 25/59.
- [47] B. Wolnik, M. Dembowski, W. Bołt, J.M. Baetens, and B. De Baets. Density-conserving affine continuous cellular automata solving the relaxed density classification problem. *Journal of Physics A: Mathematical and Theoretical*, 50:345103, 2017. 1.963, 13/55.
- [48] B. Wolnik, A. Dzedzej, J.M. Baetens, and B. De Baets. Number-conserving cellular automata with a von Neumann neighborhood of range one. *Journal of Physics A: Mathematical and Theoretical*, 50:435101, 2017. 1.963, 13/55.
- [49] J.M. Baetens and J. Gravner. Stability of cellular automata trajectories revisited: branching walks and Lyapunov profiles. *Journal of Nonlinear Science*, 26:1329–1367, 2016. IF 1.904, 28/255.
- [50] J.M. Baetens, W. Van der Meeren, and B. De Baets. On the dynamics of stochastic elementary cellular automata. *Journal of Cellular Automata*, 12:63–80, 2016. IF 0.696, 79/100.
- [51] N.R. da Silva, J.M. Baetens, M.W. da Silva Oliveira, B. De Baets, and O.M. Bruno. Classification of cellular automata through texture analysis. *Information Sciences*, 370-371:33–49, 2016. IF 4.832, 7/146.
- [52] A.J. Daly, J.M. Baetens, and B. De Baets. The impact of resource dependence of the mechanisms of life on the spatial population dynamics of an in silico microbial community. *Chaos*, 26:10.1063/1.4972788, 2016. IF 2.283, 16/255.

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- [53] A.J. Daly, J.M. Baetens, and B. De Baets. In silico substrate dependence increases community productivity, threatens biodiversity. *Physical Review E*, 93:042414, 2016. IF 2.366, 6/55.
- [54] Z. Ladin, V. d'Amico, J.M. Baetens, R.R. Roth, and W.G. Shriver. Long-term dynamics in local host-parasite interactions linked to regional population trends. *Ecosphere*, 7:e01420, 2016. IF 2.49, 53/153.
- [55] Z. Ladin, V. d'Amico, J.M. Baetens, R.R. Roth, and W.G. Shriver. Plugging the urban sink: predicting metapopulation responses to conservation in human-dominated landscapes. *Animal Conservation*, 4:10.3389/fevo.2016.00122, 2016. IF 2.835, 10/54.
- [56] S. Van Nieuland, J.M. Baetens, and B. De Baets. Spatially explicit modelling of a major endurance event 'The 100 km Dodentocht' in Belgium for supporting the organization of future editions. *PLOS ONE*, 11:e0164981, 2016. IF 2.806, 15/64.
- [57] W. Bołt, J.M. Baetens, and B. De Baets. On the decomposition of stochastic cellular automata. *Journal of Computational Science*, 11:245–257, 2015. IF 1.553, 49/105.
- [58] A.J. Daly, J.M. Baetens, and B. De Baets. The impact of initial evenness on biodiversity maintenance for a four-species in silico bacterial community. *Journal of Theoretical Biology*, 387:189–205, 2015. IF 2.156, 14/56.
- [59] C. Lopez-Molina, G. Vidal-Diez de Ulzurrun, J.M. Baetens, J. Van den Bulcke, and B. De Baets. Unsupervised ridge detection using second order anisotropic Gaussian kernels. *Signal Processing*, 116:55–67, 2015. IF 2.143, 66/257.
- [60] J. Machicao, J.M. Baetens, A.G. Marco, B. De Baets, and O.M. Bruno. A dynamical systems approach to the discrimination of the modes of operation of cryptographic systems. *Communications in Nonlinear Science and Numerical Simulation*, 29:102–115, 2015. IF 2.706, 5/254.
- [61] G. Vidal-Diez de Ulzurrun, J.M. Baetens, J. Van den Bulcke, and B. De Baets. Automated image-based analysis of spatio-temporal fungal dynamics. *Fungal Genetics and Biology*, 84:12–25, 2015. IF 3.231, 7/29.
- [62] A. Hafver, E. Jettestuen, J.M. Baetens, and M. Malthe-Sørensen. Network formation by contact arrested propagation. *Physica A*, 413:240–255, 2014. IF 1.684, 25/78.
- [63] J.M. Baetens, S. Van Nieuland, I.S. Pauwels, B. De Baets, A.M. Mouton, and P. Goethals. An individual-based model for the migration of pike (*esox lucius*) in the river Yser, Belgium. *Ecological Modelling*, 258:40–52, 2013.

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- [31] J.M. Baetens and B. De Baets. Tracking uncertainty in a spatially explicit susceptible-infected epidemic model. In S. Bandini, S. Manzoni, H. Umeo, and G. Vizzari, editors, *Proceedings of the 9th International Conference on Cellular Automata for Research and Industry (ACRI 2010)*, Lecture Notes in Computer Science, pages 95–105, Ascoli Piceno, Italy, September 2010. Springer-Verlag. Indexed by Web Of Science.
- [32] J.M. Baetens and B. De Baets. Towards spatial irregularity in cellular automata. In P.P.B. de Oliveira and J. Karri, editors, *Proceedings of 15th International Workshop on Cellular Automata and Discrete Complex Systems (AUTOMATA 2009)*, pages 346–356, São Paulo, October 2009. Universidade Presbiteriana Mackenzie.
- [33] J.M. Baetens and B. De Baets. Incorporating fuzziness in spatio-temporal epidemic spread models. In J.P. Carvalho, D. Dubois, U. Kaymak, and J.M.C. Sousa, editors, *Proceedings of the Joint 2009 International Fuzzy Systems Association World Congress and 2009 European Society of Fuzzy Logic and Technology Conference*, pages 201–206, Lisbon, Portugal, July 2009. Springer-Verlag. Best student paper award and indexed by Web Of Science.

Book chapters

- [1] J.M. Baetens and B. De Baets. A Lyapunov view on the stability of two-state cellular automata. In H. Zenil, editor, *Irreducibility and Computational Equivalence: 10 Years After the Publication of A New Kind of Science*, pages 25–33. Springer, Berlin, Germany, 2013.

Edited Volumes

- [1] G. Smagghe, S. Sleutel, J.M. Baetens, C. Callewaert, and L. De Ligne, editors. volume 84, Ghent, Belgium, 2019. Ghent University.
- [2] G. Smagghe, S. Sleutel, J.M. Baetens, and E. Volcke, editors. volume 83, Brussels, Belgium, 2018. Ghent University.
- [3] J.M. Baetens and M. Kutrib, editors. Ghent, Belgium, 2018. Ghent University.
- [4] J.M. Baetens and M. Kutrib, editors. volume 10875 of *Lecture Notes in Computer Science*, Ghent, Belgium, 2018. Springer, Heidelberg.

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- [5] G. Smagghe, S. Sleutel, J.M. Baetens, and E. Volcke, editors. volume 82, Leuven, Belgium, 2017. Ghent University.
- [6] G. Smagghe, S. Sleutel, J.M. Baetens, and E. Volcke, editors. volume 81, Ghent, Belgium, 2016. Ghent University.

Awards

1. Ron Cockcroft Award for the contribution entitled *Studying fungal growth using automated image analysis and computer simulations* to the 49th IRG Annual Meeting, Lisbon, Portugal.
2. Submitted project was ranked third among the 63 innovative projects that were submitted to the Green Engineering Camp (GEC), which was a pilot COST Interdisciplinary Science Initiative that aimed at bringing together forest scientists and ICT experts, Plitvice, Croatia, July 2012.
3. Procter & Gamble Modeling and Simulation award at the 16th Symposium on Applied Biological Sciences, December 2010, Ghent, Belgium, for our contribution entitled *Parameterization of a stochastic cellular automaton describing a chemical reaction*
4. Award for the best presentation at the 16th Symposium on Applied Biological Sciences, December 2010, Ghent, Belgium, for our contribution entitled *Parameterization of a stochastic cellular automaton describing a chemical reaction*
5. Best student presentation at the 7th International Conference on Ecological Informatics (ISEI7), January 2011, Ghent, Belgium, for my contribution entitled *A discrete, spatially explicit and GIS-coupled model for epidemic spread*
6. Best student paper award at the IFSA-EUSFLAT 2009 conference, July 2009, Lisbon, Portugal, for my contribution entitled *Incorporating fuzziness in spatio-temporal epidemic spread models*

Supervised PhDs

- [1] Dailé Avila Alonso. *Marine phytoplankton response to environmental stressors associated with climate change*. PhD thesis, Ghent University, 2022.
- [2] Liselotte De Ligne. *Fungal susceptibility of bio-based building materials*. PhD thesis, Ghent University, 2021.

- [3] Gisele Helena Barboni Miranda. *Spatially explicit modeling on networks : understanding patterns & describing processes*. PhD thesis, Ghent University, 2019.
- [4] Wouter Naessens. *Towards improved membrane fouling modelling : from an empirical to a spatially explicit framework*. PhD thesis, Ghent University, 2019.
- [5] Steffie Van Nieuland. *Analysis and modeling of biological movement phenomena based on telemetric observations*. PhD thesis, Ghent University, 2018.
- [6] Aisling Daly. *Putting ecological theories to the test : individual-based simulations of synthetic microbial community dynamics*. PhD thesis, Ghent University, 2017.
- [7] Guillermo Vidal Diez de Ulzurrun. *Fungal growth modelling and assessment : towards a three-dimensional spatially explicit fungal growth model*. PhD thesis, Ghent University, 2017.

Soft skills

