Literature

Competing first passage percolation on $\mathbb{Z}^d$

The model was introduced in [15], where it was also shown that two types with equal intensity can coexist in $d = 2$. This is generalized to higher dimensions (and more general passage time distributions) independently in [13] and [17]. Partial results concerning non-coexistence are proved in [16, 14] and the full coexistence conjecture is proved in the half-plane in [3]. Further references can be found in the survey [8].

Competing first passage percolation on the configuration model

Exponential passage times are treated in [10] (power law with finite mean but infinite variance), [4] (finite variance) and [5] (constant degrees). Results that apply for general passage time distributions can be found in [11] (power law with infinite mean) and [18] (power law with finite mean but infinite variance). Constant passage times are treated in [7, 19].

Other competition models

The two-type frog model was studied in [9] and the competition model driven by branching random walk in [12]. Related competition models on $\mathbb{Z}^d$ (not mentioned in the presentation) include a two-type version of the contact process introduced in [21], a combination of first passage percolation and bootstrap percolation [1], two-type branching random walk with annihilation [2], a model where sites can switch type [20], and competing first passage percolation with mutation [22]. A preferential attachment model with two types is analyzed in [6].

References

[1] Ahlberg, D., Griffiths, S., Janson, S. and Morris, R. (2019): Competition in growth and urns, *Rand. Struct. Alg.* **54**, 211-227.

[2] Ahlberg, D., Griffiths, S. and Janson, S. (2021): To fixate or not to fixate in two-type annihilating branching random walk, *Ann. Probab.* **49**, 2637-2667.

[3] Ahlberg, D., Deijfen, M. and Hoffman, C. (2020): The two-type Richardson model in the half-plane, *Ann. Appl. Probab.* **30**, 2261-2273.

[4] Ahlberg, D., Deijfen, M. and Janson, S. (2019): Competing first passage percolation on random graphs with finite variance degrees, *Rand. Struct. Alg.* **55**, 545-559.

[5] Antunovic, T., Dekel, Y., Mossel, E. and Peres, Y. (2017): Competing first passage percolation on random regular graphs, *Rand. Struct. Alg.* **50**, 534-583.

[6] Antunovic, T., Mossel, E. and Racz, M. (2016): Coexistence in preferential attachment networks, *Comb. Probab. Comp.* **25**, 797-822.

[7] Baroni, E., Komjathy, J. and van der Hofstad, R. (2015): Fixed speed competition on the configuration model with infinite variance degrees: unequal speeds, *Electr. J. Probab.* **20**, 1-48.

[8] Deijfen, M. and Häggström, O. (2007): The pleasures and pains of studying the two-type Richardson model, in *Analysis and Stochastics of Growth Processes and Interface Models*, Oxford University Press, pp 39-54.

[9] Deijfen, M. Hirscher, T. and Lopes, F. (2019): Competing frogs on $\mathbb{Z}^d$, *Electr. J. Probab.* **24**, 1-17.

[10] Deijfen, M. and van der Hofstad, R. (2016): The winner takes it all, *Ann. Appl. Probab.* **26**, 2419-2453.

[11] Deijfen, M., van der Hofstad, R. and Sfragara, M. (2023+): The winner takes it all but one, *J. Appl. Probab.* to appear.

[12] Deijfen, M. and Vilkas, T. (2023): Competition on Z^d driven by branching random walk, *Electron. J. Probab.* **28**, 1-11.

[13] Garet, O. and Marchand, R. (2005): Coexistence in two-type first-passage percolation models, *Ann. Appl. Probab.* **15**, 298-330.

[14] Garet, O. and Marchand, R. (2007): First-passage competition with different speeds: positive density for both species is impossible, *Electron. J. Probab.* **13**, 2118-2159.

[15] Häggström, O. and Pemantle, R. (1998): First passage percolation and a model for competing spatial growth, *J. Appl. Probab.* **35**, 683-692.

[16] Häggström, O. and Pemantle, R. (2000): Absence of mutual unbounded growth for almost all parameter values in the two-type Richardson model, *Stoch. Proc. Appl.* **90**, 207-222.

[17] Hoffman, C. (2005): Coexistence for Richardson type competing spatial growth models, *Ann. Appl. Probab.* **15**, 739-747.

[18] van der Hofstad, R. (2023+): Universal 'winner-takes-it-all' phenomenon in scale-free random graphs, arxiv.org/abs/2307.09911

[19] Komjathy, J. and van der Hofstad, R. (2015): Fixed speed competition on the configuration model with infinite variance degrees: equal speeds, preprint, arxiv:1503.09046.

[20] Kordzakhia, G. and Lalley, S. (2005): A two-species competition model on $\mathbb{Z}^d$, *Stoch. Proc. Appl.* **115**, 781-796.

[21] Neuhauser, C. (1992): Ergodic theorems for the multitype contact process, *Probab. Theory Related Fields* **91**, 467-506.

[22] Sidoravicius, V. and Stauffer, A. (2016): Multi-particle diffusion limited aggregation, *Invent. Math.* **218**, 491-571.