Travelling Waves and the Distribution of the Height of Binary Search Trees

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The purpose of this talk is to show that the distribution of the longest fragment in the random bisection problem after k steps and the height of binary search trees (and some extensions) are not only closely related in a formal way but both can be asymptotically described with the same distribution function that has to be shifted in a proper way (travelling wave).
The crucial property for the proof is a so-called *intersection property* that transfers inequalities between two distribution functions (resp. of their Laplace transforms) from one level to the next. It is conjectured that such intersection properties hold in a much more general context. If this property is verified convergence to a travelling wave follows (almost) automatically.

[1] M. Drmota: *An Analytic Approach to the Height of Binary Search Trees II*, J. Assoc. Comput. Mach. 50 (2003), 333–374.
[2] S.N. Majumdar and P.L. Krapivsky: *Traveling Waves, Front Selection, and Exact Nontrivial Exponents in a Random Fragmentation Problem*, Phys. Rev. Lett. 85 (2000), 5492–5495.

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