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Topological recursion for weighted Hurwitz numbers

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Combinatorial maps are a well-known discrete approach to 2-dimensional quantum gravity. Planar maps satisfy multiple universal properties at large scale, which guarantee the universality of the continuum limit. But more universal structures can be observed in the all-genera structures of maps, e.g. they satisfy the KP integrable hierarchy and the topological recursion. Double weighted Hurwitz numbers are a generalization of maps, for which it was natural to ask whether the same universal properties hold true. In particular, the KP hierarchy being known to be satisfied, is it possible to prove the topological recursion? I will explain in details what the weighted Hurwitz numbers are and derive their generating series in the Schur basis. I will finally explain how we proved the topological recursion for them recently. While another group proved the same result simultaneously, it is remarkable that our methods are completely different. I will explain the originality of our approach. It is based on a work with G. Chapuy, S. Charbonnier and E. Garcia-Failde.

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