Mathematics > Combinatorics

Monotone Hurwitz numbers and the HCIZ integral II

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(Submitted on 5 Jul 2011)

Motivated by results for the HCIZ integral in Part I of this paper, we study the structure of monotone Hurwitz numbers, which are a desymmetrized version of classical Hurwitz numbers. We prove a number of results for monotone Hurwitz numbers and their generating series that are striking analogues of known results for the classical Hurwtiz numbers. These include explicit formulas for monotone Hurwitz numbers in genus 0 and 1, for all partitions, and an explicit rational form for the generating series in arbitrary genus. This rational form implies that, up to an explicit combinatorial scaling, monotone Hurwitz numbers are polynomial in the parts of the partition.

Comments:	34 pages
Subjects:	**Combinatorics (math.CO)**; Mathematical Physics (math-ph); Algebraic Geometry (math.AG)
Cite as:	**arXiv:1107.1001 [math.CO]**
	(or **arXiv:1107.1001v1 [math.CO]** for this version)

Submission history

From: Jonathan Novak [view email]
[v1] Tue, 5 Jul 2011 23:34:01 GMT (28kb,D)

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