

1077-05-1569

Jonathan Novak* (jnovak@math.mit.edu), 77 Massachusetts Avenue, Building 2, Cambridge, MA 02139. *Monotone Hurwitz numbers and the HCIZ integral.*

It is a remarkable fact that the asymptotic expansion of certain integrals over the space of N by N Hermitian matrices afford analytic realizations of generating functions enumerating maps on surfaces. In order to carry this relationship over to maps whose vertices may be coloured, one has to integrate over two interacting matrices. The principal obstruction to performing such an integration turns out to be a different matrix integral, this time over the unitary group, known as the Harish-Chandra-Itzykson-Zuber integral. I will discuss joint work with I. Goulden and M. Guay-Paquet which sheds some light on the combinatorial structure of the HCIZ integral: it turns out that this integral acts as a generating function for a desymmetrized version of the double Hurwitz numbers which we call "monotone" double Hurwitz numbers. (Received September 20, 2011)