Pure Mathematics Seminar

Enumeration of Ribbon and Mobius Graphs with Real, Complex, and Quaternionic Gaussian Random Variables

Dr. Virgil Pierce
School of Mathematical and Statistical Sciences
University of Texas - Rio Grande Valley

The partition function of the Gaussian Unitary Ensembles of random matrices (the complex case) has an expansion in terms of Ribbon graphs: graphs embedded into an oriented Riemann surface in such a way that they give a dissection of the surface into discs. We have exploited this connection by deriving a hierarchy of differential equations that governs the generating functions, and finding solutions of them in some special cases, thus solving explicitly the enumeration problem in those cases. Mobius graphs are graphs embedded into unoriented Riemann surfaces in such a way that they give a dissection of the surface into discs. Generating functions for Mobius graphs can be given in terms of partition functions for the Gaussian Orthogonal and Symplectic Ensembles of random matrices (the real and quaternionic cases respectively). We will show that in some special cases we can solve the associated enumeration problem, and give some general results about the relationship between the two combinatoric problems.

Date: **Friday, September 25, 2015**
Time: **11:00 am**
Place: **Edinburg:** MAGC 1.302, **Brownsville:** UBLB 3.102

The talk will delivered live at the Brownsville campus and will be streamed to the Edinburg campus

Coffee and cookies will be served.

For further information or for special accommodations, please contact Dr. Sergey Grigorian via email at [sergey.grigorian@utrgv.edu], or Dr. Alexey Garber at [alexey.garber@utrgv.edu], or visit the webpage [http://blue.utb.edu/dg2012/puremathseminar.html].