1018-54-221   **alex James Bene*** (`bene@usc.edu`), Department of Mathematics, University of Southern California, 3620 S. Vermont Avenue, Los Angeles, CA 90089-2532. *Topological Interpretation of Combinatorics in the Tautological ring of* $\overline{\mathcal{M}}_{g,n}$.

The use of combinatorics has been ubiquitous in the study structure of the tautological ring of $\overline{\mathcal{M}}_{g,n}$, going back to Kontsevich's use of fatgraphs in his proof of Witten's conjecture. An essential tool in his proof was the use of matrix models which encoded on the one hand the combinatorics of fatgraphs and on the other the intersection numbers of the descendant classes ψ_i. These matrix models also naturally led to the introduction of combinatorial cycles defined in terms of the fatgraph complex. Recently, the connection between these combinatorial cycles and the Mumford-Miller-Morita classes has been firmly established, and the goal of this talk is to use these results to shed new light on the combinatorics of the tautological ring of $\overline{\mathcal{M}}_{g,n}$. In particular, we will discuss how certain limits of the Kontsevich-Witten model can more directly yield the combinatorics of intersection numbers of more general tautological classes. (Received March 07, 2006)

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