1116-05-2774 **Nicholas M Ercolani***, ercolani@math.arizona.edu, and **Patrick Waters**. *Quantum Gravity and Quantum Groups.*

The (2D-)Quantum Gravity referred to here emerged in the study of discrete approximations for Polyakov's formulation of Liouville field theory and has been a fertile source for questions and ideas in the analysis of random combinatorial structures and their relation to various problems at the interface between probability theory and mathematical physics. In particular, it bears on the problem of constructing a measure on random surface metrics.

Our work applies in this latter context. Specifically we study scaling limits for discrete models of the conformal geometry of surfaces. These limits lead naturally to a class of conservation laws that can be analyzed via the bionomial Hopf algebra and its associated umbral calculus. Non-commutative extensions of this bring one to the setting of Quantum Groups and a new class of problems relating the characteristic geometry of conservation laws to the classical study of ruled surfaces in algebraic geometry. (Received September 22, 2015)