

## RANDOM QUADRANGULATIONS OF GENERAL SURFACES

**Abstract:** One of the most natural model for studying random 2D geometries is to take a large collection of regular polygons and (randomly) glue their boundaries to obtain a random surface. It turns out that when all these polygons are quadrangles and an underlying surface is orientable the problem of studying this geometry is possible because of the remarkable bijection due to Marcus and Schaeffer (1996) between quadrangulations and certain tree-like structures. Their bijection, which heavily relies on the orientability of the underlying surface, arose from problems of map (graph embedded into a surface) enumeration. Asymptotically the number of maps with a given number of edges depends only on the Euler characteristic of the underlying surface and does not depend on its orientability. Thus, it is natural to ask for a bijection similar to the Marcus and Schaeffer's one, that works for nonorientable surfaces too. We present the construction which treats both orientable and nonorientable quadrangulations in a unified way and which coincides with the Marcus and Schaeffer's construction in the orientable case. This allows us to prove several results concerning asymptotic behaviour of large random quadrangulations of general surfaces as well as enumerative properties of them. This is a joint work with Guillaume Chapuy.