Cross-ratio dynamics on ideal polygons

Abstract:

Define a relation between labeled ideal polygons in the hyperbolic space by requiring that the complex distances (a combination of the distance and the angle) between their respective sides equal c; the complex number c is a parameter of the relation. This defines a 1-parameter family of maps on the moduli space of ideal polygons in the hyperbolic space (or, in its real version, in the hyperbolic plane). I shall discuss complete integrability of this family of maps and mention related topics, including Coxeter's frieze patterns and elements of the theory of cluster algebras.