

The Pentagon map and generalizations: discretizations of AGD flows

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In this talk I will discuss very recent work on generalizations of the pentagram map, a map defined on the space of convex polygons in the projective plane. The pentagram map has been recently studied by R. Schwartz, S. Tabachnikov and V. Ovsienko who proved that, when defined on twisted polygons, this discrete map is an integrable system. Furthermore, they proved that the pentagram map is a discretization of the Boussinesq equation, a well-known integrable PDE. In this talk we will give a short overview of their results and will discuss possible generalizations to maps defined on twisted k -gons in \mathbb{RP}^n , in particular $n = 3, 4$. We will describe conditions that will ensure that the generalizing map is a discretization of higher order AGD flows, and discuss on-going work to establish their integrability.