THE DEVIL'S PENTAGRAM

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The pentagram map is a simple geometric construction, where one intersects the shortest diagonals of a polygon in order to produce a new polygon. The pentagram map defines an iteration on the moduli space of projective equivalence classes of polygons. I will discuss joint work with Sergei Tabachnikov and Valentin Ovsienko, where we prove that the pentagram map is a completely integrable system in this setting. I will also describe some configuration theorems and a rigidity conjecture in projective geometry that are inspired by the pentagram map.