Borys Kadets* (bkadets@mit.edu). Sectional monodromy groups of projective curves and Galois groups of generic trinomials.

Fix a degree $d$ projective curve $X \subset \mathbb{P}^r$ over a field $K$. The talk is concerned with the Galois group $G_X$ of the field extension defined by the intersection of $X$ with the hyperplane $x_0+t_1x_1+...+t_rx_r=0$ over $K(t_1,...,t_r)$. It is well-known that $G_X$ is related to the Hilbert polynomial of $X$. When $K$ has characteristic zero $G_X = S_d$. The failure of the equality $S_d = G_X$ in characteristic $p$ forces some classical results to have a characteristic zero assumption, e.g. Harris’ extension of Castelnuovo’s inequality. Even in the special case of the plane curve $x^n = y^m$, when $G_X$ is the Galois group of the trinomial $x^n + ax^m + b$ over $K(a,b)$, determining the possibilities for $G_X$ is an open problem. As an unusual example, the Galois group of $x^{23} + ax^3 + b$ over $\mathbb{F}_2(a,b)$ is the Mathieu group $M_{23}$. We study the group $G_X$ for curves over fields of positive characteristic. When $r \geq 3$ we can list all nonstrange nondegenerate projective curves with $A_d \not\subset G_X$. All of them turn out to be smooth and rational. We also classify the Galois groups of generic trinomials, the possible groups are $AGL_1(\mathbb{F}_p^d), PGL_d(\mathbb{F}_p^d), PSL_2(\mathbb{F}_5), M_{11}, M_{23}, M_{24}, A_n$ and $S_n$. (Received September 01, 2018)