Katz Gabber covers of curves with extra automorphisms. Preliminary report.

A finite group $G$ acting faithfully on a smooth projective curve $X$ over a perfect field $k$ defines a Katz-Gabber $G$-cover $f : X \rightarrow Y = X/G$ if $Y$ is isomorphic over $P^1_k$, $f$ is unramified outside of two points $\{0, \infty\}$ of $Y$, $f$ is totally ramified over $\infty$ and $f$ is at most tamely ramified over $0$. Clearly $G$ embeds into the automorphism group $\text{Aut}_k(X)$ of $X$ over $k$.

This talk will report on results concerning the case in which $\text{Aut}_k(X)$ is larger than $G$. This has applications to finding explicit formulas for automorphisms of $k((t))$ over $k$. (Received August 22, 2008)