Exposé court

133 p-torsion of Jacobians in unramified Artin-Schreier covers of curves

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It is a classical problem to understand the set of Jacobians of curves among all abelian varieties, i.e., the image of the map $M_g \to A_g$ which sends a curve X to its Jacobian J_X. In characteristic p, A_g has interesting filtrations, and we can ask how the image of M_g interacts with them. Concretely, which groups schemes arise as the p-torsion subgroup $J_X[p]$ of a Jacobian? We consider this problem in the context of unramified $\mathbb{Z}/p\mathbb{Z}$ covers $Y \to X$ of curves, asking how $J_Y[p]$ is related to $J_X[p]$. Translating this into a problem about de Rham cohmology yields some results using classical ideas of Chevalley and Weil. This is joint work with Bryden Cais.