Dissertation Defense

Zero-Cycles on Torsors under Linear Algebraic Groups

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Abstract: Let k be a field, let G be a smooth connected linear algebraic group over k, and let X be a G-torsor. Totaro asked: if X admits a zero-cycle of degree d, does X have a closed étale point of degree dividing d? We give a positive answer in two cases:

1. G is an algebraic torus of rank ≤ 2 and $\mathrm{ch}(k)$ is arbitrary, and
2. G is an absolutely simple adjoint group of type A_1 or A_{2n} and $\mathrm{ch}(k) \neq 2$.

We also present the first known examples where Totaro's question has a negative answer.

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Mathematics and Science Center: W303

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