

## Number Theory Seminar

# Density of rational points on abelian varieties

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ABSTRACT: A question raised by B. Mazur suggests the following conjecture: *Let  $A$  be a simple Abelian variety defined over a real number field  $K$ . Denote by  $A(\mathbb{R})$  the Lie group of its real points and by  $A(\mathbb{R})^0$  the connected component of the origin. Then the group  $\mathbb{Z}P$  generated by any point  $P$  of infinite order in  $A(K) \cap A(\mathbb{R})^0$  is dense in  $A(\mathbb{R})^0$ .* Transcendence methods yield weaker statements like the following: *Let  $A$  be a simple Abelian variety of dimension  $d$  defined over a number field  $K$  embedded in  $\mathbb{R}$ . Let  $\Gamma$  be a subgroup of  $A(K) \cap A(\mathbb{R})^0$  of rank  $\geq d^2 - d + 1$ . Then  $\Gamma$  is dense in  $A(\mathbb{R})^0$ .* Some results can also be obtained on the density in  $A(\mathbb{C})$  of subgroups of  $A(K)$ , when  $K$  is any number field embedded into the field  $\mathbb{C}$  of complex numbers.

**Date:** Friday, 30.03.2007 at 15.45pm

**Place:** HWZ (HG G43)

G. Wüstholz