1077-14-386 **Yuri Zarhin*** (zarhin@math.psu.edu), Pennsylvania State University, Department of Mathematics, University Park, PA 16802. *Abelian varieties with homotheties.* Preliminary report.

We introduce a positive characteristic analogue of complex abelian varieties with semisimple Hodge groups. Namely, we call an abelian variety X that is defined over a finitely generated field of prime characteristic *an abelian variety with homotheties*, AVH if the center of the corresponding ℓ-adic Lie algebra (attached to the Galois action on the ℓ-adic Tate module of X) consists of scalars. E.g., X is an AVH if the center of its endomorphism algebra (over an algebraic closure of the ground field) is a (direct sum of) totally real number field(s). Another example of AVH is provided by abelian varieties that have a good supersingular reduction somewhere. Notice that the class of AVH's is closed under the operations of taking an abelian subvariety, a product and an isogenous variety.

We discuss various properties of AVH's, including independence on ℓ and analogues of the Tate conjecture on homomorphisms over infinite cyclotomic extensions of the ground field. (Received August 28, 2011)