

# Abelian Subvarieties and the Shimura Construction

Ernst Kani

Queen's University, Kingston, Ontario, Canada, K7L 3N6

Kani@mast.queensu.ca

**Abstract.** In 1971 Shimura showed that each weight 2 Hecke eigenfunction  $f$  gives rise to both an abelian subvariety and an abelian quotient of the Jacobian variety of the modular curve  $X_1(N)/\mathbb{Q}$ . The purpose of this paper is to show that both these constructions follow from a general “dictionary” that translates statements about subvarieties and quotients of an abelian variety into statements about ideals of the associated endomorphism algebra. This dictionary is, in fact, a special case of more general dictionary which applies to subobjects and quotients in a general semi-simple abelian category.