

Abelian Subvarieties and the Shimura Construction

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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.