

A Deligne-Rapoport model for $U(2)$ Shimura varieties

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Abstract

The Deligne-Rapoport model of the reduction of a modular curve at a prime with $\Gamma_0(p)$ -level structure is a key tool in the study of the arithmetic of modular forms. We construct an analogous model for $U(2)$ Shimura varieties, a particular class of higher-dimensional analogues of modular curves. As a consequence of this model, we are able to give a completely geometric proof of certain cases of the Jacquet-Langlands correspondence.