The geometry of Hilbert modular varieties and a mod p Jacquet-Langlands correspondence

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We study the global geometry of a certain stratification on Hilbert modular varieties of Iwahori level (introduced by the author and E. Goren), proving they are products of P^1 bundles over certain quaternionic Shimura varieties. We use this description to prove a Jacquet-Langlands type relationship between mod p quaternionic modular forms and mod p forms appearing on the Hilbert modular variety, akin to a classical result of Serre.

This is joint work with Fred Diamond and Shu Sasaki.

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