1018-11-38 **Jayce R Getz*** (getz@math.wisc.edu), UW-Madison, Mathematics Department, 480 Lincoln Drive, Madison, WI 53706, and **Mark Goresky**. *Hilbert modular forms, intersection homology and base change.*

Let $L$ be a totally real number field with $[L:\mathbb{Q}] = n$ and set $G_L := \mathrm{Res}_{L/\mathbb{Q}}(\mathrm{GL}_2)$. For every ideal $c \subset \mathcal{O}_L$, the ring of integers of $L$, let $K_0(c) \leq G_L(\mathbb{A}^f)$ be the standard compact open subgroup, and consider the finite level Shimura variety

$$Y_0(c) := \mathrm{Sh}_{K_0(c)}(G_L, (\mathbb{C}-\mathbb{R})^n) := G_L(\mathbb{Q})\backslash(\mathbb{C}-\mathbb{R})^n \times G_L(\mathbb{A}^f)/K_0(c);$$

let $X_0(c)$ be its Bailey-Borel compactification. For any subfield $E \leq L$ such that $\mathrm{Gal}(L/E)$ is abelian, we isolate a subspace $IH_n^E(X_0(c))$ of $IH_n(X_0(c))$. Given any class $[Z] \in IH_n^E(X_0(c))$ and any Dirichlet character $\chi$ on $L$ that is a base change from $E$, we use the theory of abelian base change to construct a Hilbert modular form $\Phi_{[Z],\chi}$ on $E$ with coefficients in $IH_n^E(X_0(c))$. For certain nice cycles $Z$, including some Shimura subvarieties that intersect the cusps of $X_0(c)$, we moreover evaluate the Fourier coefficients of

$$\langle Z, \Phi_{[Z],\chi_E}\rangle_{IH}$$

in terms of period integrals. Here $\langle\cdot,\cdot\rangle_{IH}$ is the generalized Poincaré pairing in intersection homology. (Received February 13, 2006)