1014-11-1081 **Jayce Robert Getz*** (getz@math.wisc.edu), University of Wisconsin, Mathematics Department, 480 Lincoln Drive, Madison, WI 53706. *Intersection numbers of Hecke cycles on Hilbert modular varieties.*

Let $\mathcal{O}$ be the ring of integers of a totally real number field E and set $\mathbf{G} := \mathrm{Res}_{E/\mathbb{Q}}(\mathrm{GL}_2)$. For each pair of ideals $\mathfrak{m}, \mathfrak{c} \subset \mathcal{O}$, let $T(\mathfrak{m})$ denote the $\mathfrak{m}$th Hecke operator associated to the standard compact open subgroup $U_0(\mathfrak{c})$ of $\mathbf{G}(\mathbb{A})$. Setting

$$X_0(\mathfrak{c}) := \mathbf{G}(\mathbb{Q})\backslash\mathbf{G}(\mathbb{A})/K_\infty U_0(\mathfrak{c}),$$

where K_∞ is a certain subgroup of $\mathbf{G}(\mathbb{R})$, we use $T(\mathfrak{m})$ to define a Hecke cycle

$$Z(\mathfrak{m}) \in IH_{2[E:\mathbb{Q}]}(X_0(\mathfrak{c}) \times X_0(\mathfrak{c})).$$

Here $IH_\bullet$ denotes intersection homology. We use Zucker's conjecture (proven by Looijenga and independently by Saper and Stern) to obtain a formula relating the intersection numbers $Z(\mathfrak{m}) \cdot Z(\mathfrak{n})$ to the trace of $T(\mathfrak{m}) \circ T(\mathfrak{n})$ considered as an endomorphism of the space of Hilbert cusp forms on $U_0(\mathfrak{c})$. (Received September 27, 2005)