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Ken Ono* (ono@math.wisc.edu), Dept. of Mathematics, University of Wisconsin, Madison, WI 53706, and **Kathrin Bringmann** and **Jeremy Rouse**. *Traces of singular moduli on Hilbert modular surfaces.*

Suppose that $p \equiv 1 \pmod{4}$ is a prime, and that O_p is the ring of integers of $K := \mathbb{Q}(\sqrt{p})$. A classical result of Hirzebruch and Zagier asserts that certain generating functions for the intersection numbers of Hirzebruch-Zagier divisors on the Hilbert modular surface $(H \times H)/SL_2(O_p)$ are weight 2 holomorphic modular forms. Using recent work of Bruinier and Funke, we show that the generating functions of traces of singular moduli over these intersection points are often weakly holomorphic weight 2 modular forms. For the singular moduli of $j(z) - 744$, we explicitly determine these generating functions using classical Weber functions, and we factorize their “norms” as products of Hilbert class polynomials. This is joint work with Kathrin Bringmann and Jeremy Rouse. (Received February 20, 2006)