Speaker: Jayce Getz, University of Wisconsin
Title: Hilbert modular forms, intersection homology, and base change. (joint work with Mark Goresky at IAS)
Abstract: Let $p \equiv 1 \pmod 4$ be a prime, and let

$$Y := SL_2(\mathbb{Z})_2(\mathcal{O}_{\mathbb{Q}(\sqrt{p})})\backslash\mathfrak{H}^2$$

be the Hilbert modular surface attached to $\mathbb{Q}(\sqrt{p})$. In their famous 1974 Invent. Math. paper, Hirzebruch and Zagier defined a family of cycles Z_m on a toroidal compactification X^T of Y such that

$$\sum_{n\geq 0}(\gamma, Z_n)q^n$$

is an elliptic modular form with nebentypus for every class $\gamma \in H_2(X^T)$. This result leads to a beautiful geometric interpretation of the Doi-Naganuma lifting from elliptic modular forms to Hilbert modular forms. In this talk, we will recall this interpretation of Hirzebruch and Zagier's work and explain how it motivates recent joint work of the author and Mark Goresky on families of Hilbert modular forms with coefficients in intersection homology produced using abelian base change.