# On the distribution of Hecke eigenvalues for Hilbert modular forms

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Let $F$ be a totally real field of degree $d$, $\mathcal{O}_F$ its ring of integers, $I$ an ideal in $\mathcal{O}_F$ and $\Gamma_0(I) \subset GL_2(\mathbb{R})^d$ the Hecke congruence subgroup of $GL_2(\mathbb{R})^d$. For $\mathfrak{p}$ a prime ideal in $\mathcal{O}_F$, let $T_\mathfrak{p}$ be the Hecke operator acting on cusp forms $\varpi = \otimes_{j=1}^d \varpi_j$ in $L^2(\Gamma_0(I)\backslash GL_2(\mathbb{R})^d)$ and let $C_j$ be the Casimir operator on the $j^{th}$-factor, for $1 \leq j \leq d$. Let $\lambda_{\mathfrak{p},\varpi}$ and $\lambda_{\varpi_j}$ be the respective sets of eigenvalues of these operators. In joint work with Angel Villanueva we study the distribution of these eigenvalues in regions $\Omega_t$ of the eigenvalue parameter space, as $t \to \infty$, showing that, under a natural condition on $\mathfrak{p}$, the eigenvalues of $T_\mathfrak{p}$ (resp. of $C_j$) are distributed according to the Sato-Tate measure (resp. according to the Plancherel measure).