A representation \( \pi \) of a group \( G \) is said to be distinguished with respect to a subgroup \( H \) of \( G \) if it admits a non-trivial \( H \)-invariant linear form, i.e., there exists a linear form \( \ell \) on \( V_\pi \) such that \( \ell(\pi(h)v) = \ell(v) \) for all \( h \in H \) and \( v \in V_\pi \).

This work is on distinguished representations of the group \( G = SL_2(E) \) with respect to the subgroup \( H = SL_2(F) \), where \( E/F \) is a quadratic extension of \( p \)-adic fields. Denote by \( Hom_H(\pi, 1) \) the space of \( H \)-invariant linear forms. The authors classify distinguished representations and compute the dimension of \( Hom_H(\pi, 1) \). Possible dimensions are 1, 2 and 4, in contrast to the results for \( (GL_n(E), GL_n(F)) \), where the space of invariant forms is at most one-dimensional. They show that the dimension of \( Hom_H(\pi, 1) \) varies inside an \( L \)-packet similar in spirit to the multiplicity formula for automorphic representations due to J.-P. Labesse and R. P. Langlands [Can. J. Math. 31, 726–785 (1979; Zbl 0421.12014)].

Their approach is based on the structure of \( L \)-packets and the results for \( (GL_2(E), GL_2(F)) \) [the authors, Pac. J. Math. 206, No. 2, 269–286 (2002; Zbl 1049.22008); Y. Z. Flicker, J. Reine Angew. Math. 418, 139–172 (1991; Zbl 0725.11026); J. Hakim, Duke Math. J. 62, No. 1, 1–22 (1991; Zbl 0724.22016)], using restriction from \( GL_2(E) \) to \( SL_2(E) \).

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