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**ARIEL PACETTI**, Universidad Nacional de Córdoba

*Non-paritious Hilbert modular forms*

Buzzard and Gee have formulated a conjecture predicting the existence of Galois representations attached to automorphic representations of reductive groups over number fields that are “L-algebraic” (a condition on the local factors at the infinite places). We investigate this conjecture for the automorphic representations generated by Hilbert modular eigenforms whose weights are not all congruent modulo 2. These are not L-algebraic as automorphic representations of  $GL_2$ ; but we show that they become L-algebraic after restriction to suitable subgroups intermediate between  $GL_2$  and  $SL_2$ , and we construct the Galois representations into the corresponding L-groups predicted by the Buzzard–Gee conjecture. We will describe algorithms for computing these non-paritious Hilbert modular forms using definite quaternion algebras, and we give an explicit example of such an eigenform of weight  $(4, 3)$  over the field  $Q(\sqrt{2})$ .