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Nigel Boston* (boston@math.wisc.edu), Department of Mathematics, University of Wisconsin, Madison, WI 53706. *Non-abelian Cohen-Lenstra Heuristics*.

In 1983, Cohen and Lenstra observed that the frequency with which a given abelian p -group A (p odd) arises as the p -class group of an imaginary quadratic field K is apparently proportional to $1/|\text{Aut}(A)|$. The Galois group of the maximal unramified p -extension of K has abelianization A and one might then ask how frequently a given p -group G arises. We develop a theory wherein this frequency is inversely proportional to the size of its automorphism group in a new category and then test this against computations. If time permits, I shall describe progress on the real quadratic case. This is joint work with Michael Bush and Farshid Hajir. (Received August 09, 2011)