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Let  $E/\mathbb{Q}$  be an elliptic curve; it is well known that  $a_p(E) = 0$  if and only if the reduction  $E_p$  is supersingular. In this talk, I will explain how to interpret the condition “ $a_p(E) = 0$ ” in terms of the automorphic representation of  $\mathrm{GL}_2$  attached to  $E$ , and discuss how this situation generalizes to abelian varieties of higher dimension. (Received December 12, 2011)