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Bo-Hae Im* (im@math.utah.edu), Dept. of Mathematics, Chung-Ang University, 221, Heukseok-dong, Dongjak-gu, Seoul, 155-756, South Korea, and **Michael Larsen** (larsen@math.indiana.edu), Dept. of Math., Indiana University, Bloomington, IN 47405. *Open conditions for infinite multiplicity eigenvalues on elliptic curves.*

Let E be an elliptic curve defined over a number field K . We show that for each root of unity ζ , the set Σ_ζ of $\sigma \in \text{Gal}(\overline{K}/K)$ such that ζ is an eigenvalue of infinite multiplicity for σ acting on $E(\overline{K}) \otimes \mathcal{C}$ has non-empty interior.

For the eigenvalue -1 , we can show more: for any σ in $\text{Gal}(\overline{K}/K)$, the multiplicity of the eigenvalue -1 is either 0 or ∞ . It follows that Σ_{-1} is open. (Received August 15, 2006)