1017-11-105   **Bo-Hae Im*** (`im@math.utah.edu`), Department of Mathematics, University of Utah, 155 S.1400 E. JWB 233, Salt Lake City, UT 84112, and **Michael Larsen**, Department of Mathematics, 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 $\sigma \in \mathrm{Gal}(\overline{K}/K)$ 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 $\mathrm{Gal}(\overline{K}/K)$, the multiplicity of the eigenvalue -1 is either 0 or ∞. It follows that Σ_{-1} is open. (Received February 15, 2006)