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 *$\ell$ -adic Galois representations attached to elliptic curves with CM*

In a recent preprint, Rouse, Sutherland, and Zureick-Brown have given a (conjectural) explicit classification of all the  $\ell$ -adic Galois representations (up to conjugation) attached to elliptic curves over  $\mathbb{Q}$  without complex multiplication. In this talk, we apply a recent classification (by the speaker) of Galois representations attached to curves with CM to give a complete and explicit classification of all the  $\ell$ -adic Galois representations in the CM case over  $\mathbb{Q}$ . In particular, we will describe how many different representations appear for each rational  $j$ -invariant with CM.