Diagonal classes, Yoshida lifts, and rational points on elliptic curves

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Abstract: I will report on joint ongoing work with Andreatta, Bertolini and Seveso, addressing the equivariant Birch and Swinnerton-Dyer conjecture for a rational elliptic curve over the number fields cut out by certain self-dual Artin representations of dimension at most 4. Our key tool is the Yoshida endoscopic lift for $GSp(4)$, which associates genus-two Siegel modular forms with appropriate pairs of elliptic modular forms.