

# On the $p$ -adic deformations of Saito-Kurokawa liftings

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## Abstract

This is a joint work with C. Skinner. Let  $f$  be a cuspidal eigenform of weight  $2k - 2 \geq 2$  and level 1. Suppose  $p$  is an ordinary prime for  $f$  and  $V_f$  is the  $p$ -adic representation of weight  $2k - 3$  associated to  $f$ . We show that if the zeta function of  $f$  vanishes at  $s = k - 1$  to odd order, then the Selmer group  $H_f^1(\mathbb{Q}, V_f(k - 1))$  is infinite. To prove this result we construct a suitable extension of  $V_f$  using Galois representations associated to Siegel modular forms that are congruent modulo large powers of  $p$  to a suitable Saito-Kurokawa lift of  $f$ .