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**Dan Fretwell\*** ([daniel.fretwell@bristol.ac.uk](mailto:daniel.fretwell@bristol.ac.uk)), School of Mathematics, University of Bristol, Bristol, BS81TW, United Kingdom. *An Eisenstein congruence for genus 2 Hilbert-Siegel forms.*

Congruences between modular forms have been a topic of interest for many years. They tell us a wealth of information about Galois representations and Selmer groups.

For classical modular forms one can study congruences between cusp forms and Eisenstein series, e.g. the Ramanujan 691 congruence for the discriminant function. Many results are known about these congruences in general, in particular the (significant) moduli mainly come from critical values of Dirichlet L-functions.

One can also study "Eisenstein congruences" over general reductive groups. In particular for  $\mathrm{GSp}_4$  there is a long standing conjecture due to Harder, predicting similar congruences for genus 2 Siegel cusp forms. The modulus now comes from a critical value of the L-function of a genus 1 form.

In this talk I will formulate a generalization of this conjecture for Hilbert-Siegel forms and give computational evidence. To do this I will consider certain spaces of algebraic modular forms and provide algorithms for computing with such objects. (Received April 14, 2017)