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**Jennifer S. Balakrishnan\*** (jen@math.harvard.edu), **J. Steffen Müller** and **William A. Stein**. *A  $p$ -adic Birch and Swinnerton-Dyer conjecture for modular abelian varieties.*

In 1986, Mazur, Tate, and Teitelbaum gave a  $p$ -adic analogue of the conjecture of Birch and Swinnerton-Dyer for elliptic curves over the rationals. We discuss a generalization of this conjecture to the case of modular abelian varieties and primes  $p$  of good ordinary reduction.

We will briefly outline algorithms to compute the appropriate  $p$ -adic  $L$ -series and  $p$ -adic regulators and discuss numerical evidence for the conjecture in the case of modular abelian surfaces. (Received September 20, 2012)