1161-11-87 **Kirsten Eisentraeger***, Department of Mathematics, Penn State University, University Park, PA 16802, and **Sean Hallgren**, **Chris Leonardi**, **Travis Morrison** and **Jennifer Park**. *Computing endomorphism rings of supersingular elliptic curves.*

Computing endomorphism rings of supersingular elliptic curves is an important problem in computational number theory, and it is also closely connected to the security of some of the recently proposed isogeny-based cryptosystems. In this talk we give a new algorithm for computing the endomorphism ring of a supersingular elliptic curve E defined over a finite field. The algorithm works by first computing two cycles in the ℓ-isogeny graph that create an order in the endomorphism ring of E. Then we determine which maximal order containing this order is the endomorphism ring of E. (Received August 11, 2020)