1163-11-918 **Francesc Fité**, **Kiran S. Kedlaya** and **Andrew V. Sutherland*** (drew@math.mit.edu).
Sato-Tate groups of abelian threefolds. Preliminary report.

Let A be an abelian variety of dimension g defined over a number field K. As defined by Serre, the Sato-Tate group $\mathrm{ST}(A)$ is a compact subgroup of the unitary symplectic group $\mathrm{USp}(2g)$ equipped with a map that sends each Frobenius element of the absolute Galois group of K at primes $\mathfrak{p}$ of good reduction for A to a conjugacy class of $\mathrm{ST}(A)$ whose characteristic polynomial is determined by the zeta function of the reduction of A at $\mathfrak{p}$. Under a set of axioms proposed by Serre that are known to hold for $g \leq 3$, up to conjugacy in Usp(2g) there is a finite list of possible Sato-Tate groups that can arise for abelian varieties of dimension g over number fields.

For $g = 1$ there are 3 possibilities for $\mathrm{ST}(A)$, for $g = 2$ there are 52, and last year it was shown that for $g = 3$ there are 410. In this talk I will give a brief overview of this classification and discuss ongoing efforts to produce explicit examples that realize these 410 possibilities. (Received September 15, 2020)