1154-11-473 **Adela Gherga*** (ghergaa@math.ubc.ca). *Computing elliptic curves over* $\mathbb{Q}$. Preliminary report. Let S be a set of rational primes and consider the set of all elliptic curves over $\mathbb{Q}$ having good reduction outside S and bounded conductor N. Currently, using modular forms, all such curves have been determined for $N \leq 500000$; the bulk of this work is attributed to Cremona.

Early attempts to tabulate all such curves often relied on reducing the problem to one of solving a number of certain integral binary forms called Thue-Mahler equations. These are Diophantine equations of the form $F(x, y) = u$, where F is a given binary form of degree at least 3 and u is an S-unit.

A theorem of Bennett-Rechnitzer shows that the problem of computing all elliptic curves $\mathbb{Q}$ of conductor N reduces to solving a number of Thue-Mahler equations. To compute all such equations, there exists a practical method of Tzanakis-de Weger using bounds for linear forms in p-adic logarithms and various reduction techniques. In this talk, we describe our refined implementation of this method and discuss the key refinements used in our algorithm. (Received September 04, 2019)