Chevyrev and Galbraith's Conjecture on Theta Series Generated by Maximal Orders of A Quaternion Algebra

Fung King Cheong

September 30, 2015, 14:00-15:00

Abstract

Chevyrev and Galbraith recently devised an algorithm which inputs a maximal order of the quaternion algebra ramified at one prime and infinity and constructs a supersingular elliptic curve whose endomorphism ring is precisely this maximal order. They proved that their algorithm is correct whenever it halts, but were unable to show that it indeed halts with any input. They made a conjecture that there are no two isomorphic maximal orders of the quaternion algebra such that their corresponding theta functions "(optimally) dominates" the other. If this is the case then their algorithm indeed halts. In this talk, we are going to verify their conjecture.