



## Projective equivalences of elliptic and hyperelliptic planar curves

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### ABSTRACT

Elliptic and hyperelliptic curves are not rational curves, but they are parametrizable by square-roots of rational functions. Beyond their rich mathematical properties and their applications in Cryptography, elliptic and hyperelliptic curves appear naturally in several constructions carried out in Computer Aided Geometric Design: for instance, offsets of rational curves, bisectors of certain curves, intersections of quadrics and contour curves of rational canal surfaces. Additionally, two curves are projectively equivalent when there exists a projectivity mapping one to the other. Thus, two pictures of a same object taken from two cameras are projectively equivalent, which implies that detecting projective equivalence helps to recognizing objects. Furthermore, particular instances of projective equivalences are affine equivalences (continuous deformations keeping the shape of the object), isometries (rigid motions) or symmetries. In this talk we will present algorithms to check whether two given elliptic or hyperelliptic curves are projectively equivalent. These algorithms are based on finding a corresponding transformation between the Weierstrass forms of the curves.

