

# Elliptic Divisibility Nets

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## Abstract

Elliptic divisibility sequences (first described by Morgan Ward in 1948) are integer sequences attached to the multiples of a rational point on an elliptic curve. Such sequences satisfy nonlinear recurrence relations and are analogous to Fibonacci numbers. We describe and generalise results concerning such sequences to the higher rank case of elliptic divisibility nets. Given a choice of  $n$  rational points on an elliptic curve, the associated net is a set of integers, indexed by  $\mathbb{Z}^n$ , which arises out of all possible integer linear combinations of the points. Properties of elliptic divisibility nets can be used to study the Mordell-Weil groups of elliptic curves of higher rank.