

# Robert J.S. McDonald – Publications

Department of Mathematics, Yale University,

10 Hillhouse Ave, New Haven, CT 06511

1-(860)-608-3329 | [robert.j.mcdonald@yale.edu](mailto:robert.j.mcdonald@yale.edu)

<https://mathrjsm.com>

---

## 1. Torsion Subgroups of Elliptic Curves over Function Fields of Genus 0 (2017)

in [Journal of Number Theory Volume 193](#)

preprint available at <https://mathrjsm.com/#research>

Abstract: *Let  $K = \mathbb{F}_q(T)$  be the function field of a finite field of characteristic  $p$ , and  $E/K$  be an elliptic curve. It is known that  $E(K)$  is a finitely generated abelian group, and that for a given  $p$ , there is a finite, effectively calculable, list of possible torsion subgroups which can appear. For  $p \neq 2, 3$ , a minimal list of prime-to- $p$  torsion subgroups has been determined by Cox and Parry. In this article, we extend this result to the case when  $p = 2, 3$ , and determine the complete list of possible full torsion subgroups which can appear, and appear infinitely often, for a given  $p$ .*

## 2. Torsion Subgroups of Elliptic Curves over Function Fields of Genus 1

(2019, submitted)

for a current (rough) draft, see <https://mathrjsm.com/#research>

Abstract: *Let  $k = \mathbb{F}_q$  be a finite field of characteristic  $p$ , and  $\mathcal{C}$  be a smooth, projective, absolutely irreducible curve of genus one over  $k$ . Let  $K = k(\mathcal{C})$ , and  $E$  be a non-isotrivial elliptic curve over  $K$ . Then,  $E(K)$  is a finitely generated abelian group, and there is a finite list of possible torsion subgroups which can appear that depends only on  $\mathcal{C}$  and  $p$ . In this article, we build on previous work to determine a complete list of possible full torsion subgroups which can appear over  $K$ .*