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Nathan Kaplan* (nathan.kaplan@yale.edu), Yale University, Department of Mathematics, 10 Hillhouse Avenue, New Haven, CT 06511. *Higher Weight Enumerators and Rational Points on Intersections of Plane Curves.*

Let C_1 and C_2 be curves of degrees d and e , respectively, in the projective plane over the finite field \mathbb{F}_q . If these curves do not share a common component then Bezout's theorem implies that they intersect in at most $d \cdot e$ points. For any $k \in \{0, 1, \dots, d \cdot e\}$, what is the probability that C_1 and C_2 intersect in exactly k \mathbb{F}_q -rational points?

We will discuss an approach to this question using a version of the MacWilliams theorem for higher weight enumerators of linear codes. We will focus on the case of intersections of cubic curves. (Received September 15, 2014)