

1154-11-832

Hanson Smith* (hanson.smith@colorado.edu), Department of Mathematics, University of Colorado Boulder, Campus Box 395, Boulder, CO 80309. *Non-monogenic Division Fields of Elliptic Curves.*

We will outline recent work studying monogeneity and the division fields of elliptic curves. For a variety of positive integers n , we are able to show the existence of infinite families of elliptic curves over \mathbb{Q} with n -division fields, $\mathbb{Q}(E[n])$, that are non-monogenic, i.e., the ring of integers does not admit a power integral basis. Moreover, we can parametrize some of these families explicitly. Our main technique combines a global description of the Frobenius by Duke and Tóth with a simple algorithm based on ideas of Dedekind. If time permits, we will also describe recent progress in generalizing these ideas to abelian surfaces. (Received September 11, 2019)