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Colin J Weir* (cjweir@ucalgary.ca), Calgary, Alberta , Canada. *Constructing Global and Non-Global Cubic Function Fields.*

We present a Kummer theoretic algorithm for constructing cubic function fields over a finite field \mathbb{F}_q with prescribed ramification. We then use this in a tabulation algorithm to construct all cubic function fields over \mathbb{F}_q up to a given discriminant bound and compare the data to known asymptotics. Moreover, we show how our construction techniques can be extended to characteristic zero to construct interesting curves over number fields. (Received September 25, 2012)