Annamaria Iezzi*, aiezzi@usf.edu. *Singular curves over finite fields with many rational points.

This talk is divided in two parts, whose common point is the Aubry–Perret bound, a generalization of the Hasse–Weil bound for singular curves defined over finite fields. In the first part, more geometric, we will present a construction of singular curves over finite fields with many rational points, which turns out to be useful for finding conditions for the existence of curves attaining the Aubry–Perret bound. In the second part, more arithmetic, we will show how to use the Aubry–Perret bound to prove a result about the decomposition of rational functions defined over finite fields.

The results presented in each part are joint work respectively with Yves Aubry and Xiang-dong Hou. (Received September 03, 2019)