TITOLO: On the singular local limit of a nonlocal traffic model

ABSTRACT: Consider a family of advection equations where the velocity field is given by the convolution of the solution with a regular kernel. These equations have several applications concerning for instance models of vehicular and pedestrian traffic. In the singular limit where the convolution kernel is replaced by a Dirac delta, one formally recovers a conservation law. Can we rigorously justify this formal limit? This question has been originally posed by P. Amorim, R.M. Colombo and A. Teixeira. I will exhibit counterexamples showing that, despite numerical evidence suggesting a positive answer, one in general does not have convergence of the solutions. I will also discuss a possible explanation of the reason why the numerical results provide the wrong intuition. The talk will be based on joint works with Maria Colombo, Gianluca Crippa and Marie Graff.