



# Lothar-Collatz-Kolloquium für Angewandte Mathematik

**Donnerstag, den 17. Januar 2019, um 17:15 Uhr, im Hörsaal 5**

**Prof. Dr. Gianluca Crippa\***

(Universität Basel, Department Mathematik und Informatik)

## *On the local limit for nonlocal conservation laws*

### Zusammenfassung/Abstract:

I will discuss a question posed by P. Amorim, R. Colombo and A. Teixeira, which can be loosely speaking formulated as follows. Consider a family of continuity equations where the velocity field is given by the convolution of the solution with a regular kernel. 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? We exhibit counterexamples showing that, despite numerical evidence suggesting a positive answer, one in general does not have convergence of the solutions. We also show that the answer to the above question is positive if we consider viscous perturbations of the nonlocal equations. In this case, in the singular local limit the solutions converge to the solution of the viscous conservation law. We will also discuss some more recent results dealing with the case of an anisotropic convolution kernel, a more realistic case for applications to traffic modelling. The talk will be based on joint work with Maria Colombo, Marie Graff, and Laura Spinolo.

### Kontakt:

**JProf. Dr. Camilla Nobili**

Differentialgleichungen und Dynamische Systeme

Raum 114, Tel.: 040 42838-4942

E-Mail: [camilla.nobili@uni-hamburg.de](mailto:camilla.nobili@uni-hamburg.de)

Web: <https://www.math.uni-hamburg.de/home/nobili/>

---

### \*Prof. Dr. Gianluca Crippa

Universität Basel, Department Mathematik und Informatik,

Spiegelgasse 1, 4051 Basel, Schweiz

E-Mail: [gianluca.crippa@unibas.ch](mailto:gianluca.crippa@unibas.ch)

Web: <https://dmi.unibas.ch/de/personen/gianluca-crippa/>

Die aktuelle Version der Kolloquiumsankündigungen (inkl. Abstracts) finden Sie unter:

<http://www.math.uni-hamburg.de/spag/angmath/kolloq/>