INTRODUCTION TO RCD SPACES AND APPLICATIONS TO SCALAR CURVATURE STABILITY PROBLEMS

CHRISTIAN KETTERER (MAYNOOTH)

Abstract. The theory of curvature-dimension conditions for metric measure spaces, such as the Riemannian Curvature-Dimension condition $\mathsf{RCD}(\mathsf{K},\mathsf{N})$, has emerged as a powerful tool in differential geometry and geometric analysis. I will give a short introduction to this theory, and I will highlight one of its key features: stability under measured Gromov-Hausdorff convergence. I will then present a nonlinear analogue of almost splitting maps into Euclidean space, as harmonic maps into a flat torus. Existence of such maps implies Gromov-Hausdorff closeness to a flat torus in any dimension. Combining these results with a Bochner-type inequality by Stern yields a Gromov-Hausdorff stability theorem for flat 3-tori with almost nonnegative Scalar curvature. This is a joint work with Shouhei Honda, Ilaria Mondello, Raquel Perales and Chiara Rigoni.