Angles between curves in metric measure space

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Abstract. We propose a new notion of angle between two curves in the framework of metric (and metric measure) spaces. More precisely, we give a new notion of angle between two curves in a metric space. Such a notion has a natural interplay with optimal transportation and is particularly well suited for metric measure spaces satisfying the curvature-dimension condition. Indeed one of the main results is the validity of the cosine formula on $\mathrm{RCD}(K,N)$ metric measure spaces. As a consequence, the new introduced notions are compatible with the corresponding classical ones for Riemannian manifolds, Ricci limit spaces and Alexandrov spaces. This is a joint work with Andrea Mondino.