Kell, Martin
On Cheeger and Sobolev differentials in metric measure spaces.  

Let $(M, d, m)$ be a complete separable metric measure space, with $m$ a Radon measure. The main goal of the paper is to describe the Sobolev differentials in terms of the Lipschitz differentials. Applying the abstract theory to Lipschitz and Sobolev functions the author shows that on differentiability spaces the Lipschitz module is locally finite dimensional, from which it follows that that all Sobolev spaces $W^{1,p}(M, m)$ are reflexive. The last section is devoted to the relationship of Cheeger and Sobolev differentials.

Reviewer: Bożena Piątek (Gliwice)

MSC:
53C23 Global geometric and topological methods (à la Gromov); differential geometric analysis on metric spaces
58C20 Differentiation theory (Gateaux, Fréchet, etc.) on manifolds
31E05 Potential theory on fractals and metric spaces

Keywords:
Lipschitz functions; Sobolev functions; metric measure spaces

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References:


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