1135-58-2136   **Ali Behzadan*** (`abehzadan@ucsd.edu`), 9500 Gilman Drive, Dept. 0112, La Jolla, CA 92093, and **Michael Holst** (`mholst@ucsd.edu`), 9500 Gilman Drive, Dept. 0112, La Jolla, CA 92093. *On Approximation of Certain Geometric Operators Between Sobolev Spaces of Sections of Tensor Bundles on Compact Manifolds Equipped With Rough Metrics.*

The study of Einstein constraint equations in general relativity naturally leads to considering Riemannian manifolds equipped with nonsmooth metrics. There are several important differential operators on Riemannian manifolds whose definitions depend on the metric; gradient, divergence, Laplacian, covariant derivative, conformal Killing operator, and vector Laplacian are among those operators. We will examine the possibility of approximation of such operators defined using a rough metric by the corresponding operators defined using a smooth metric. This paves the road to understanding to what extent the nice properties that these operators possess when they are defined by a smooth metric will transfer to the case where the underlying metric is nonsmooth. (Received September 25, 2017)

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