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Brock Schmutzler* (brock.schmutzler@mail.missouri.edu), University of Missouri, Columbia, MO. *Layer Potential Methods for Elliptic PDE's in Rough Subdomains of Riemannian Manifolds*. Preliminary report.

We study the effectiveness of the layer potential method for solving boundary value problems for scalar elliptic operators, such as the Laplace–Beltrami operator, as well as systems, such as the Stokes system, in rough subdomains of Riemannian manifolds. The novelty lies in the consideration of singular integral operators with variable-coefficient kernels, defined on the boundary of a higher-dimensional version of chord-arc domains in the plane. Dealing with such problems requires techniques from harmonic analysis, geometric measure theory, and global analysis. This is joint work with Marius Mitrea. (Received August 25, 2014)