Subdivision Schemes in Manifolds

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Subdivision schemes iteratively produce a sequence of finer and finer meshes. We consider modifications of linear subdivision schemes, defined in vector spaces, which work in nonlinear geometries, such as Riemannian manifolds or Lie groups.

We present our results on the convergence of such geometric subdivision schemes and on the smoothness of their limits: In the arbitrary mesh case, we can show C^1 smoothness of the geometric scheme, if the corresponding linear scheme is C^1. In the regular mesh case, we can show smoothness equivalence between a geometric and a linear scheme that is based on an arbitrary dilation matrix.