

Geometrical embeddings of Schwartz distributions into algebras of generalized functions

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We present some new approaches to embedding distributions on differentiable manifolds into algebras of generalized functions in the sense of Colombeau. Using spectral theory of the Laplace operator on compact Riemannian manifolds we find embeddings that respect the underlying geometric structure of the manifold and preserve the microlocal structure. For non-compact manifolds, smoothing is based on the solution operator of the wave equation. Finite propagation speed allows to retain the favorable properties of the compact case.