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A Simple Technique for Solving Partial Differential Equations on Surfaces

Many applications require the solution of time-dependent partial differential equations (PDEs) on surfaces or more general manifolds. Methods for treating such problems include surface parameterization, methods on triangulated surfaces and embedding techniques. This talk describes an embedding approach based on the closest point representation of the surface and describes some of its advantages over other embedding methods. Noteworthy features of the method are its generality with respect to the underlying surface and its simplicity. In particular, the method requires only minimal changes to the corresponding three-dimensional codes to treat the evolution of PDEs on surfaces.