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Paul von Dohlen* (vondohlenp@wpunj.edu) and **Patrick Miller**. *Particle Tracking in Three-Dimensional Flows: Evolution and Refinement of a Smooth Surface.*

An initial surface represented parametrically on a domain in the (u, v) plane is evolved under the flow map for a system of three ODEs. Given a triangulation on the points in (u, v) space, the C^1 surface is represented as the Clough-Tocher interpolant, a piecewise bicubic requiring no more than first derivatives. We present a technique for refining the surface representation when it is determined that the accuracy of the interpolation is no longer sufficient. (Received September 25, 2006)