

Geometric Hermite Subdivision

Ulrich Reif

Abstract

We propose a family of nonlinear subdivision schemes generating smooth curves from geometric Hermite data, which consist of a sequence of points and corresponding tangent directions. The basic element of all constructions is the approximate clothoid average. It reproduces clothoids with high accuracy, while circles and straight lines are passed back exactly. We prove that one specific scheme generates G^1 -curves, and that the tangent directions of the limit curve equal the limit of the sequence of tangent directions.