Conic Representation Of A Rational Cubic Spline

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Summary

A rational cubic spline with a family of shape parameters is discussed from the viewpoint of its application in computer graphics. It incorporates both conic sections and parametric cubic curves as special cases. The parameters (weights), in the description of the spline curve can be used to modify the shape of the curve, locally and globally, at the knot intervals. The rational cubic spline attains parametric C2 smoothness, whereas the stitching of the conic segments preserves visually reasonable smoothness at the neighboring knots. The curve scheme is interpolatory and can plot parabolic, hyperbolic, elliptic, and circular splines independently, as well as bits and pieces of a rational cubic spline

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