理论研究

Bézier曲线的三角扩展

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摘要   利用含有三角函数的T-Bézier曲线，结合加权的思想对Bézier曲线进行了扩展，给出了扩展曲线的基函数表达式，研究了曲线的性质、拼接及应用，通过调节形状参数的值可以精确表示或者逼近圆、椭圆等二次曲线，给出了精确表示和逼近圆的实例，该曲线在结合圆锥曲线的自由曲线设计中具有较高的应用价值。

关键词   Bézier曲线   曲线设计   形状参数

分类号

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Trigonometric extension of Bézier curve

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Abstract

One kind of curve with a shape control parameter is defined，which is an extension of the Bézier curve.Its base representation is presented.Meanwhile，the properties，application of the curve and its basis functions have been studied.The $G1$ and G_2 continuity conditions of two-piece of the curves is also discussed.This curve not only resolves the expand problem of the Bézier curve，and can also precisely represent or approach quadric curves through changing the value of the shape parameters，such as circular arcs，ellipses etc.Some examples about how to precisely represent or approach a circular arc are given in this paper.This curve has high applied value in the curve design practice.

Key words   Bézier curve   curve design   shape control parameters

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