

Dyn, Nira; Floater, Michael S.; Hormann, Kai

A C^2 four-point subdivision scheme with fourth order accuracy and its extensions. (English)

[Zbl 1080.65526](#)

Dæhlen, Morten (ed.) et al., Mathematical methods for curves and surfaces: Tromsø 2004. Sixth international conference on mathematical methods for curves and surfaces, celebrating the 60th birthday of Tom Lyche, Tromsø, Norway, July 1–6, 2004. Brentwood, TN: Nashboro Press (ISBN 0-9728482-4-X/hbk). Modern Methods in Mathematics, 145-156 (2005).

Summary: We present a new four-point subdivision scheme that generates C^2 curves. It reproduces cubic polynomials, has a basic limit function with support $[-4, 3]$, and is close to being interpolatory. The refinement rule is based on local cubic interpolation, followed by evaluation at $1/4$ and $3/4$ of the refined interval. We investigate the approximation properties of this four-point scheme and extend it to a new family of $2n$ -point schemes. The performance of the new schemes is demonstrated by several examples.

For the entire collection see [\[Zbl 1065.65003\]](#).

MSC:

65D18 Numerical aspects of computer graphics, image analysis, and computational geometry

Cited in **1** Review
Cited in **45** Documents

Keywords:

[four-point subdivision scheme](#); [curves](#); [refinement](#); [cubic interpolation](#)