



Analytic Anti-Aliasing of Linear Functions on Polytopes

1. T. Auzinger¹,
2. M. Guthe²,
3. S. Jeschke¹

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Author Information

- 1 Vienna University of Technology, Austria
- 2 Philipps-Universität Marburg, Germany

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- Abstract
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- 1.3.3 [Computer Graphics]: Picture/Image Generation—Antialiasing

Abstract

This paper presents an analytic formulation for anti-aliased sampling of 2D polygons and 3D polyhedra. Our framework allows the exact evaluation of the convolution integral with a linear function defined on the polytopes. The filter is a spherically symmetric polynomial of any order, supporting approximations to refined variants such as the Mitchell-Netravali filter family. This enables high-quality rasterization of triangles and tetrahedra with

linearly interpolated vertex values to regular and non-regular grids. A closed form solution of the convolution is presented and an efficient implementation on the GPU using DirectX and CUDA C is described.

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