A bivariate C^1 subdivision scheme based on cubic half-box splines

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We present a bivariate subdivision scheme based on cubic half-box splines [1]. This scheme, which can be thought of as the dual of Loop's subdivision scheme [2], can be applied to three-valent meshes of otherwise arbitrary manifold topology. As it is spline-based, the overall C^1 limit surface can be evaluated at arbitrary parameter values using well-known techniques. Interestingly, it is (one of) the first practical subdivision schemes exhibiting ineffective eigenvectors [3]. As a so-called honeycomb scheme, applications lie in architectural geometry and the design of organic meshes.

Joint work with: Jiří Kosinka (University of Groningen), Malcolm Sabin (Numerical Geometry Ltd.).

References

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