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A Resolution Independent Approach for the Accurate Rendering of Grooved Surfaces

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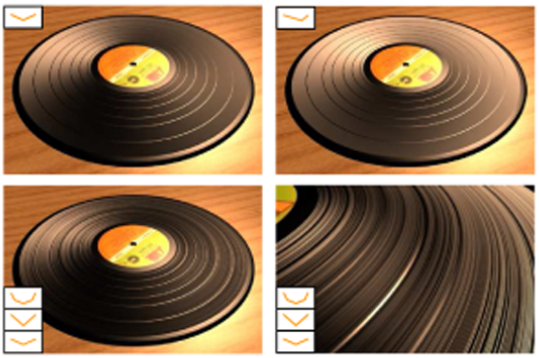

This paper presents a method for the accurate rendering of path-based surface details such as grooves, scratches and similar features. The method is based on a continuous representation of the features in texture space, and the rendering is performed by means of two approaches: one for isolated or non-intersecting grooves and another for special situations like intersections or ends. The proposed solutions perform correct antialiasing and take into account visibility and inter-re?ections with little computational effort and memory requirements. Compared to anisotropic BRDFs and scratch models, we have no limitations on the distribution of grooves over the surface or their geometry, thus allowing more general patterns. Compared to displacement mapping techniques, we can efficiently simulate features of all sizes without requiring additional geometry or multiple representations

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