

The Return of Forgotten Mathematics in Computer Graphics

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In the mid 1800s, Hermann Grassmann discovered an important field of mathematics that he called Extension Theory. However, his insights were largely forgotten as the vector analysis and linear algebra that we consider standard today rose to popularity. Recently, the utility of Grassmann's theory has been rediscovered in the field of computer graphics by researchers who understand how it can unify many

of the geometric operations that are used every day. This talk introduces the basic concepts of the exterior algebra and presents a new mathematical picture of homogeneous point, line, and plane representations as well as the operations that can be performed among them. Emphasis is placed on the application of these concepts in the field of computer graphics and real-time rendering.

