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A geometric acoustics simulation proposal for curved geometry

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Current methods for acoustical simulations based on geometrical acoustics are designed to ascertain the properties of rooms using models comprising large flat polygons. Typically these same methods are used on models of spaces with curved surfaces in which the curves are approximated using planar facets. In such cases, errors are introduced in the simulation when the infinitely varying normal of a curve is replaced with a finite number of piecewise constant normals, one for each facet. NURBS - Non-Uniform Rational B-Splines - offer an alternative geometric representation that allows curves to be represented with precision. Using Rhinoceros, a commonly used NURBS-based CAD program, as a platform for an acoustic simulation tool for models of both NURBS and polygon geometry, we can begin to discover whether it is possible to conceptualize a geometrical acoustics method that is more accurate for curved surfaces. This talk will cover the implementation and early testing of an acoustic-simulation plug-in for Rhinoceros.