



Siegen, den 27.07.2016

Oberseminar Geomathematik

Im Rahmen des Oberseminars der AG Geomathematik findet der folgende Gastvortrag statt, zu dem hiermit alle Interessierten recht herzlich eingeladen sind. Der Vortrag wird von

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am

Mittwoch, den 10. August 2016, ab 10:15 Uhr

im Raum ENC-D 201

gehalten zum Thema

**„Quaternary Triangular Mesh: A Hierarchical
Coördinate System
for Geoprocessing and Cartography“.**

Prof. Dr. V. Michel

Quaternary Triangular Mesh: A Hierarchical Coördinate System for Geoprocessing and Cartography

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Abstract

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As a coördinate system for the Earth's surface based upon latitude and longitude is refined, the areas of facets at the poles become small. The ratio of the area of the smallest facet to the largest one approaches zero.

A coördinate system developed by Geoffrey Dutton that produces triangular facets of roughly uniform size over the entire Earth's surface is described. The ratio of the area of the smallest facet to the largest one approaches $6/11$.

A method is described to refine that coördinate system within a specified polygon. A data structure to use the coördinate system is described.

Using that coördinate system as a horizontal basis, a three-dimensional coördinate system consisting of prisms, each of which has a base in the surface mesh, is developed. Methods to compute intersections of rays, along which the radiative-transfer equation is integrated, with faces of prisms of the mesh, and therefrom to compute interpolation coefficients necessary to compute a Jacobian matrix, are described.