A U S H A N G

FREIE UNIVERSITÄT BERLIN

Fachbereich Mathematik und Informatik

Promotionsbüro, Arnimallee 14, 14195 Berlin

D I S P U T A T I O N

Montag, 1. Dezember 2014, 12.00 Uhr

Ort: Pi-Gebäude, Raum 108/109, Arnimallee 6, 14195 Berlin

Disputation über die Doktorarbeit von

Frau Jana de Wiljes

Thema der Dissertation:

Data-Driven Discrete Spatio-Temporal Models: Problems, Methods and an Arctic Sea Ice Application

Thema der Disputation:

The Art Gallery Problem

Die Arbeit wurde unter der Betreuung von **Prof. Dr. R. Klein** durchgeführt.

Abstract: The problem of finding the minimum number of guards sufficient to ensure the visibility coverage of an art gallery was first contemplated by Victor Klee in 1973. Here an art gallery is generally associated with a simple polygon but different variants with more complex (e.g., with holes) or restricted polygons have been considered. The first theoretical breakthrough was already achieved in 1975 when Chvátal proved a sharp upper bound (n/3 rounded down for a polygon with n vertices) for the required number of guards. An alternative much shorter proof which makes use of a graph coloring argument was provided by Fisk in 1978 and will be shown and explained during the talk. In general the number of guards necessary to ensure visual coverage is much smaller. As the underlying problem of finding a minimal guard set is NP-hard much research has been devoted to developing algorithms that provide approximations of the optimal solutions. Recently, researchers of computational geometry have achieved substantial progress in the development of efficient algorithms that aim at producing a solution close to the optimum (though convergence has not yet been shown). The basic idea of this state-of-the-art method is discussed and explained by means of an exemplary polygon.

Die Disputation besteht aus dem o. g. Vortrag, danach der Vorstellung der Dissertation einschließlich jeweils anschließenden Aussprachen.

Interessierte werden hiermit herzlich eingeladen

Der Vorsitzende der Promotionskommission
Prof. Dr. R. Klein