A U S H A N G

FREIE UNIVERSITÄT BERLIN

Fachbereich Mathematik und Informatik

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D I S P U T A T I O N

Freitag, 26. April 2019, 10:30

Ort: Seminarraum ZIB
(Zuse Institut, Takusstr.7, 14195 Berlin)

Disputation über die Doktorarbeit von

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Thema der Dissertation:

The Limited Workspace Model for Geometric Algorithms

Thema der Disputation:

Minimum Diameter Color Spanning Sets

Die Arbeit wurde unter der Betreuung von **Prof. Dr. W. Mulzer** durchgeführt.

Abstract:
The problem of finding the minimum diameter color spanning sets (MDCSS) is defined as follows: we are given a set S of n points in a d-dimensional space. Each point is colored with one of the given k colors, for a fixed parameter $k > 0$. A subset of S that has at least one point of each color is called a color spanning subset. The goal is to find a color spanning subset of S which has the minimum diameter among all such subsets.

Fleischer and Xu showed that finding MDCSS is NP-hard for L_p metrics where $1 < p < \infty$. Therefore, approximation algorithms have been studied for this problem. Kazemi et al. presented a $(1+\epsilon)$-approximation algorithm for MDCSS that runs in $2^{O(\gamma \log \gamma)} O(n \log n)$ time, where $\gamma = \epsilon^{(d-1)/2}$. Their algorithm uses the ϵ-kernel technique by Agarwal et al. in 2004. Furthermore, Kazemi et al. showed that, by taking the Exponential Time Hypothesis, there is not any $(1 + \epsilon)$-approximation algorithm running in $2^{o(\gamma)} poly(n)$ time for MDCSS. They also provided a near optimal approximation algorithm for MDCSS in high dimensional spaces, when the dimension is considered as an input parameter.

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. W. Mulzer