

A U S H A N G

FREIE UNIVERSITÄT BERLIN

Fachbereich Mathematik und Informatik

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DISPUTATION

Montag, 22. November 2021, 16:00 Uhr

[WebEx](#)

Disputation über die Doktorarbeit von

Herrn Georg Lehner

Thema der Dissertation:

**The passage from the integral to the rational group ring in algebraic
K-theory**

Thema der Disputation:

Modular Representation Theory and Berman's Theorem

Die Arbeit wurde unter der Betreuung von **Prof. Dr. H. Reich** durchgeführt.

Abstract: Modular representation theory is the study of representations of a finite group G over a base field k with non-zero characteristic p . Many results which hold in ordinary representation theory require that the base field is algebraically closed and of characteristic 0, and are not true in the modular setting. One key statement needed for the study of character tables is that the number of irreducible G -representations over an algebraically closed field of characteristic zero is equal to the number of conjugacy classes of G . The appropriate generalization is given by Berman's Theorem, which states that the number of irreducible G -representations over an arbitrary field k is equal to the number of k -conjugacy classes of p -regular elements of G , where p is the characteristic of k . We will give a sketch of a proof of Berman's theorem using Brauer characters and give some applications to the algebraic K -theory of the group algebras $\mathbb{F}_p G$, $\mathbb{Z}_p G$ and $\mathbb{Q}_p G$.

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. H. Reich