

Zeta functions and topological field theories

ZEIT:

13.5.2015, 14:00 Uhr - 16:30 Uhr

ORT:

Universität Potsdam
Campus Am Neuen Palais
Haus 9, Raum 1.12
Am Neuen Palais 10
14469 Potsdam

PROGRAMM:

14:00 **Prof. Dr. Christian Kassel**

On some combinatorial zeta functions

Zeta functions appear in many fields of mathematics and in various guises. I will give examples of zeta functions obtained from counting points in a variety, loops in a graph, or words in an alphabet. In some emblematic cases such a function is rational. I will next concentrate on zeta functions constructed from matrices with entries in group rings. As Kontsevich first proved, some of the latter zeta functions, though not rational, are algebraic. For such zeta functions I will explain where the algebraicity comes from and show examples where they can be computed explicitly.

15:00 Kaffeepause

15:30 **Prof. Dr. Christoph Schweigert**

How quantum field theory can help to understand representation theory

Topological field theories despite their name and their applications in physics constitute a rigorous piece of mathematics, with deep links to low-dimensional topology (in particular to invariants of knots

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and three-manifolds) and to representation theory. We give an introduction to topological field theories of Turaev-Viro type, aiming at a general mathematical audience. Our treatment will include the case of three-manifolds with boundaries and with defects as well, which allows us to explain structures of independent interest in representation theory.

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