SFB-Seminar Index Theorie (Teilprojekt C7)

ZEIT:
4.2.2014, 14:30 Uhr - 18:00 Uhr

ORT:
Humboldt-Universität zu Berlin
Institut für Mathematik und Institut für Physik
AG Mathematische Physik von Raum, Zeit und Materie
IRIS Gebäude, Vortragsraum 2.07
Zum Großen Windkanal 6
12489 Berlin-Adlershof

PROGRAMM:

14:30 - 15:00 SFB-Vollversammlung

15:00 - 15:30 Pause

15:30 - 16:30 **Prof. Dr. Damian Rössler**

On the logarithmic derivatives of Artin L-functions at negative integers

We shall describe a conjecture relating the logarithmic derivatives of Artin L-functions at negative integers to certain arithmetic invariants of Shimura varieties, which are described via Arakelov theory. This conjecture may be viewed as a higher-dimensional generalisation of the formula of Chowla and Selberg computing the periods of CM elliptic curves. In some situations, the conjecture can be proven using some deep results of JM Bismut. The talk will be aimed at a general mathematical audience and will focus on historical aspects. This is joint work with V. Maillot.

16:30 - 17:00 Pause

17:00 - 18:00 **Prof. Dr. Jean-Michel Bismut**

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From the index theorem to the heat equation

In this talk, Prof. Bismut will review analytic aspects of index theory influenced by algebraic geometry, the local index theorem and Quillen s superconnections playing a prominent role. The Gaussian aspect of index theory will be emphasized. The hypoelliptic deformations of Hodge theory will be briefly presented. While the heat equation has played a prominent role in standard index theory, methods of index theory applied to the heat equation lead naturally to the evaluation of orbital integrals via hypoelliptic deformations of the standard Laplacian.

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