



## **Prof. Dr. Dirk Kreimer (IHES, Frankreich) Dyson--Schwinger equations from Hochschild cohomology**

### **TIME:**

8 Apr 2009, 15:00 - 17:00

### **LOCATION:**

HU, Institut für Mathematik, Rudower Chaussee 25, 12489 Berlin, 3.001  
(ground floor)

We first prove locality of counterterms using the Hochschild cohomology of the Hopf algebras introduced in the first lecture. We then show that Dyson-Schwinger equations are solutions of fixed-point equations formulated in this cohomology.

We then study the structure of sub-Hopf algebras and co-ideals. This allows to incorporate the renormalization group so as to turn the Dyson-Schwinger equations into non-linear ordinary differential equations for beta-functions and anomalous dimensions. We study the structure of solutions to these equations. Here, we are mainly interested in non-perturbative results for quantum electrodynamics and quantum chromodynamics.

For further information please have a look at  
\*<http://math.bu.edu/people/dkreimer/structure.html>\*.

### **Contact:**

Humboldt-Universität zu Berlin . Institut für Mathematik  
SFB 647 . Unter den Linden 6 . 10099 Berlin  
Tel. +49 30 2093 1804 . Fax. +49 30 2093 2727  
[sfb647@math.hu-berlin.de](mailto:sfb647@math.hu-berlin.de)

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