



Hauptvortrag/Plenary lecture

Donnerstag/Thursday, 9:00, Wolfgang-Paul-Hörsaal

Fundamental Lemma and Hitchin Fibration

GÉRARD LAUMON

The Langlands-Shelstad Fundamental Lemma is a combinatorial conjecture which plays a crucial role in the stabilization of the Arthur-Selberg trace formula and the computation of the Hasse-Weil zeta functions of the Shimura varieties. Waldspurger has shown that it is sufficient to prove it in equal characteristics. In this case the Fundamental Lemma may be interpreted as a cohomological statement, due to the functions-sheaves dictionary of Grothendieck.

In joint work with Ngô Bao Châu, we have proved the Fundamental Lemma for unitary groups. We use earlier results of Rapoport and myself, Goresky, Kottwitz and MacPherson, and a computation by Ngô of the numbers of points of the Hitchin fibrations over a finite field in terms of stable global orbital integrals. In my talk I would like to present these developments.