

---

**PIERRE-HENRI CHAUDOUARD**, CNRS, Université Paris-Sud, Mathématique, Bât. 425, F-91405 Orsay Cedex, France  
*The truncated Hitchin fibration and the weighted fundamental lemma*

The main geometric terms of the Arthur–Selberg trace formula are the weighted orbital integrals. According to Arthur, to stabilize the full trace formula, one needs the weighted fundamental lemma which is a family of complicated identities between  $p$ -adic weighted orbital integrals. This is a generalization of the fundamental lemma of Langlands–Shelstad. Ngô Bao Châu recently proved the fundamental lemma of Langlands–Shelstad by a cohomological study of the Hitchin fibration.

My talk will be based on the proof of the weighted fundamental lemma I obtained with Gérard Laumon. I shall introduce a truncated version of the Hitchin fibration such that a weighted orbital integral of Arthur computes the number of rational points of a truncated fiber. I shall explain how to extend the results of Ngô to our situation and how to deduce the weighted fundamental lemma of Arthur.