

Concordia University

School of Graduate Studies

DOCTORAL THESIS DEFENCE

The Oral Examination

for the Degree of Doctor of Philosophy of

Olga Balkanova

in the

Department of Mathematics & Statistics

will take place on

Tuesday, April 7, 2015

in room LB 921-4, 1400 de Maisonneuve Blvd. W.

at 9:00 a.m.

Thesis Title:

The fourth moment of automorphic L- functions at prime power level

Examining Committee:

TBA, Chair

Dr. Chantal David (Mathematics & Statistics), Co-Supervisor

Dr. Laurent Habsieger (Mathématiques , Université de Montréal), Co-Supervisor

Dr. Pablo Bianucci (Physics)

Dr. Hershy Kisilevsky (Mathematics & Statistics)

Dr. Chris Cummins (Mathematics & Statistics)

External Examiner:

Dr. Emmanuel Royer

Laboratoire de mathématiques

Université de Montréal

Abstract

The main result of this dissertation is an asymptotic formula for the fourth moment of automorphic L -functions at prime power level p^ν , $\nu \rightarrow \infty$. This is a continuation of the work of Rouymi, who computed the first three moments at prime power level, and a generalisation of results obtained for prime level by Duke, Friedlander, Iwaniec and Kowalski, Michel, Vanderkam.

Résumé

Le résultat principal de cette thèse est une formule asymptotique pour le quatrième moment des fonctions L automorphes de niveau p^ν , où p est un nombre premier et $\nu \rightarrow \infty$. Il prolonge le travail de Rouymi, qui a calculé les trois premiers moments de niveau p^ν , et il généralise les résultats obtenus en niveau premier par Duke, Friedlander, Iwaniec et Kowalski, Michel, Vanderkam.

Sommario

Il risultato principale di questa tesi è una formula asintotica per il momento quarto di funzioni automorfe L a livello p^ν , dove p è un numero primo e $\nu \rightarrow \infty$. Questo estende il lavoro di Rouymi, che ha calcolato i primi tre momenti a livello p^ν , e ciò generalizza i risultati per il livello primario di Duke, Friedlander, Iwaniec e Kowalski, Michel, Vanderkam.