A SATO-TATE LAW FOR GL(3)

VALENTIN BLOMER, JACK BUTTCANE, AND NICOLE RAULF

ABSTRACT. We consider statistical properties of Hecke eigenvalues $A_j(p, 1)$ for fixed p as ϕ_j runs through a basis of Hecke-Maaß cusp forms for the group $SL_3(\mathbb{Z})$. We show that almost all of them satisfy the Ramanujan conjecture at p and that their distribution is governed by the Sato-Tate law.

MATHEMATISCHES INSTITUT, BUNSENSTR. 3-5, 37073 GÖTTINGEN, GERMANY *E-mail address*: blomer@uni-math.gwdg.de

MATHEMATISCHES INSTITUT, BUNSENSTR. 3-5, 37073 GÖTTINGEN, GERMANY *E-mail address*: buttcane@uni-math.gwdg.de

U.M.R. CNRS 8524, UFR de Mathématiques, Université des Sciences et Technologies de Lille, 59655 Villeneuve d'Ascq, France

E-mail address: Nicole.Raulf@math.univ-lille1.fr

2010 Mathematics Subject Classification. Primary 11F72, Secondary 11F60.

Key words and phrases. Sato-Tate law, Ramanujan conjecture, Kuznetsov formula, density results.

First author supported by a Volkswagen Lichtenberg Fellowship and a Starting Grant of the European Research Council. Second author supported by a Starting Grant of the European Research Council.