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FAKULTÄT FÜR MATHEMATIK
Dekan Univ.-Prof. Dr. Radu Ioan Bot

Einladung zur öffentlichen Defensio

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Thema der Dissertation

Whittaker periods of isobaric sums over totally real fields and special L-values

Abstract:

In the last few years, the arithmetic theory of special values of L-functions has enjoyed enormous progress. In particular, thanks to the introduction of representation-theoretic invariants of cohomological automorphic representations called *Whittaker–Betti periods*, remarkable results have been obtained by Raghuram–Shahidi, Raghuram, Grobner–Harris, Grobner, Grobner–Lin, Li–Liu–Sun and others about the special values of Rankin–Selberg automorphic L-functions for $\mathrm{GL}_n \times \mathrm{GL}_{n-1}$ over arbitrary number fields.

In contrast to this, a lot less seems to be known about special values of Rankin–Selberg automorphic L-functions for $\mathrm{GL}_n \times \mathrm{GL}_m$ with $1 \leq m < n-1$. Among the most prominent results we have, on the one hand, a theorem of Grobner–Sachdeva over CM-fields (with a parity restriction on m and n), and on the other, results of Harder–Raghuram and Raghuram about *quotients* of special L-values (the base field being assumed totally real and totally imaginary, respectively) where such quotients are brought into connection with quantities known as *relative periods*.

In my thesis, I prove a result on special values of Rankin–Selberg L-functions for $\mathrm{GL}_n \times \mathrm{GL}_m$ over a totally real field, with n odd and $m < n$ even, by a method similar to the one used in the work of Grobner–Sachdeva. I then infer a result on quotients of such special values, which, when compared and combined with Harder–Raghuram's results, yields a relation between Whittaker periods, on the one hand, and Harder–Raghuram relative periods on the other. In the special case $m = n - 1$, I compare the latter result with earlier work of Raghuram about relative periods being equal to quotients of Whittaker periods of opposite signatures, up to an explicit power of the imaginary unit i.

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Zeit und Ort:

Topic: Thesis defense G. Castellano
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