

Moments of spinor L-functions and symplectic Kloosterman sums

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Spectral summation formulas - such as the Selberg, Petersson or Kuznetsov trace formulas for $GL(2)$ - constitute a powerful class of tools in analytic number theory. In the higher rank case, however, there are only few results. For Siegel modular forms of degree two an analogue of the Petersson formula was derived by Kitaoka [1].

By performing a detailed analysis of this Kitaoka-Petersson formula Blomer [2] obtains information on spectral averages of spinor L-functions for large weights. In this talk, I focus on the level aspect and show how to get similar results to [2] for large prime level. Taking into account the recent proof of Böcherer's conjecture, I hereby evaluate a fourth moment of the spinor L-function in the level aspect. The core of this computation is based on the manipulation of symplectic Kloosterman sums and the application of the adelic framework.

References

- [1] Yoshiyuki Kitaoka, Fourier coefficients of Siegel cusp forms of degree two, *Nagoya Math. J.* **93** (1984), pp. 149–171.
- [2] V. Blomer, Spectral summation formula for $GSp(4)$ and moments of spinor L-functions, *J. Eur. Math. Soc.* **21** (2019), pp. 1751–1774.