

Reciprocity formulae via integral representations

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In the past few years, some attention has been given to reciprocity formulae. There are two main reasons that help understand this recent interest. The main one is that they give a somewhat conceptual way of summarizing a technique often used in dealing with problems on families of GL_2 L -functions in which one uses the Kuznetsov formula on both directions in order to estimate a moment of these L -functions. The second comes from their satisfying intrisical nature relating object that have no a priori reason to be linked. The first versions of these formulae used Classical techniques such as the Voronoi summation formula and the Kuznetsov formula. Starting from work of Zacharias, it became clear that an adelic and representation-theoretic approach could be of interest. Not only this has the advantage of getting the generalization to number fields almost immediate, it can also avoid some of the combinatorial difficulties appearing when applying the Voronoi formula.

In this lecture we discuss a version of a reciprocity formula by Blomer and Khan that is valid on general number fields using the language of automorphic representations. We will sketch our method and will describe as much as possible, the analogies between the two approaches.