Research Highlight: Twist Automorphic Descent on the Jacquet-Langlands correspondence

Work of Dr ZHANG Lei

A classical approach in the representation theory to study abstract structures of groups is to realize their representations in concrete modules and study them via particular tools provided by the concrete modules. So a natural question is how to construct concrete modules for given representations. To answer this question for automorphic representations, Ginzburg, Rallis and Soudry introduced the automorphic descent method in [1] to construct concrete modules from cuspidal automorphic representations of general linear groups to those of classicial groups, which accounts for the special case of Langlands functoriality. Joint with Prof. Dihua Jiang, Dr. ZHANG Lei extends their method to the twisted automorphic descent for non-generic cuspidal automorphic representations of pure inner forms of classical groups. In [2], Dr. Zhang with his collaborators gave their first try and recovered a classical case of Langlands functoriality, Jacquet-Langlands correspondence. As a consequence of this new method, the results in [2] also play an essential role in their approach to prove the global Gan-Gross-Prasad conjecture for the special Bessel model case in their follow-up projects.

Reference:

[1] D. Ginzburg, S. Rallis, and D. Soudry; *The Descent Map from Automorphic Representations of GL(n) to Classical Groups.* World Scientific Press, 2011.

[2] D. Jiang, B. Liu, B. Xu, and L. Zhang; *The Jacquet-Langlands Correspondences via Twisted Descent.* International Mathematics Research Notices, Vol. 2016, No. 18, pp. 55455.