

**Research Highlight: Local root numbers and spectrum of the local descents for orthogonal groups: p-adic case**

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The method of descent was introduced by D. Ginzburg, S. Rallis and D. Soudry to establish the Langlands functoriality for local and global generic representations between classical groups and general linear groups. It has since become a very important tool for us to study representations of classical groups. The essence of this method is to study the representations of the "small" groups obtained from the "small" representations of "big" groups by the Fourier coefficients.

In this paper, we investigated the local descents for special orthogonal groups over p-adic local fields of characteristic zero. Using the local Gan-Gross-Prasad conjecture (established by Waldspurger for this case in 2012), we obtained explicit spectral decomposition of the local descents at the first occurrence index in terms of the local Langlands data via the explicit local Langlands correspondence. The most interesting part was to transform the representation theoretic questions into number theoretic questions via computing the local root numbers.

**Reference:**

D. Jiang, L. Zhang, "Local root numbers and spectrum of the local descents for orthogonal groups: p-adic case". *Algebra & Number Theory*, 12, No. 6 (2018): 1489-1535.H