

# MATRIX-VALUED SPHERICAL FUNCTIONS ON SEMISIMPLE LIE GROUPS

NOBUKAZU SHIMENO

*Abstract:*

Harish-Chandra's  $c$ -function on a real semisimple Lie group gives the leading coefficient of the zonal spherical function and determines the Plancherel measure for the spherical transform. Gindikin and Karpelevič gave an explicit formula for the  $c$ -function. Moreover, Heckman and Opdam developed a theory of hypergeometric functions associated with root systems, which are generalizations of zonal spherical functions.

In the case of spherical functions for non-trivial  $K$ -types, explicit formulae for  $c$ -functions and spherical inversions have been known for a few cases, including the case of one-dimensional  $K$ -types. In this talk, I will explain that for certain class of  $K$ -types, associated elementary spherical functions can be written by Opdam's non-symmetric hypergeometric functions. As corollaries, we have explicit formulae of  $c$ -functions and inversion formulae for the spherical transforms.

This talk is based on joint work with Hiroshi Oda.