

# HAUSDORFF DIMENSION OF COLLISION TIMES FOR THE MULTIVARIATE BESSEL PROCESS

NICOLE HUFNAGEL

## ABSTRACT

In this joint work we consider radial Dunkl processes of types  $A_{N-1}$  and  $B_N$ , also known as multivariate Bessel processes, which are widely used to describe systems of multiple particles in one dimension that repel mutually on the real line. These processes are mainly characterized by multiplicity parameters controlling the strength of the particles' interaction. It is well-known that collisions between particles never take place when all of these multiplicities are large, but occur almost surely otherwise. Until now, no further characterization of the collision times could be given.

In this talk, however, we present an approach to achieve a more precise characterization by invoking the fractal dimension: Generalizing the techniques introduced by Liu and Xiao in 1998 who studied the return times to the origin of self-similar diffusions, we derive the Hausdorff dimension of the set of collision times.

Joint work with Sergio Andraus (The University of Tokyo)

TECHNICAL UNIVERSITY OF DORTMUND

*E-mail address:* nicole.hufnagel@math.tu-dortmund.de