Sharp geometric inequalities and partial differential equations: a Helgason-Fourier approach

In recent years, the Helgason-Fourier analysis theory has been proved to be powerful in the study of sharp geometric inequalities and PDEs. In this talk, I will report our recent progress of applying this theory to the study of some Hardy-Adams inequalities and a higher order version of Brezis-Nirenberg problems on hyperbolic spaces. This is a joint work with G. Lu and Q. Yang.