Nonlinear and Geometric PDEs
EDP non-linéaires et géométriques
(Org: **Joshua Flynn** (Massachusetts Institute of Technology) and/et **Jérôme Vétois** (McGill University))

LORENZO CARLETTI, University of Oxford

JEFFREY CASE, The Pennsylvania State University
Sharp Michael-Simon inequalities and the extrinsic Yamabe constant

The extrinsic Yamabe constant is a conformal invariant of submanifolds that computes the best constant in the L^2-Michael–Simon inequality. In this talk I will describe its basic properties, explain how to compute it on conformal submanifolds of the sphere, and apply it to the nonexistence of compact minimal submanifolds and obstructions to regularity in the σ_k-Loewner–Nirenberg problem. This talk is based on joint works with Dawit Mengesha, Samuel Perez-Ayala, and Aaron J. Tyrrell.

NGUYEN LAM, Memorial University of Newfoundland
Doubly sharp Poincaré–Sobolev inequalities on hyperbolic spaces

We study when one can subtract the full spectral gap $\left(\frac{N-1}{p}\right)^p$ of the p-Laplacian on the hyperbolic space $\mathbb{H}^N$ and still keep the sharp Euclidean Sobolev constant. Using a change of function which keeps the L^p norm, together with a one-dimensional tangent line inequality, we establish such doubly sharp inequalities with explicit remainder terms in new ranges of p, including $N = 3$ and $2 \leq p < 3$. The same method also gives sharp logarithmic Sobolev inequalities with the full spectral gap. This is joint work with A. X. Do, D. Ganguly and G. Lu.

GALEN NOVELLO, University of New Mexico
Sharp Decay of Solutions to p-Fractional equations with Hardy Potentials

In this talk I will present a sharp decay for non-negative solutions of p-fractional equations with Hardy potentials with a critical exponent in the setting of homogeneous groups. In particular the decay of solutions to $\mathcal{L}_{s,p}u = \frac{|u|^{p^*_\alpha(s)-2}u}{|g|^\alpha}$ where $\mathcal{L}_{s,p}$ is the fractional p-Laplacian and $p^*_\alpha(s)$ is the fractional Hardy-Sobolev exponent will be discussed.

RAQUEL PERALES, Centro de Investigación en Mátematicas, Guanaujato

JACOB REZNIKOV, Massachussets Institute of Technology

DIMITER VASSILEV, University of New Mexico
Regularity of Solutions to Non-Local Operators on Homogeneous Groups

We prove a Harnack inequality and show Hölder continuity of solutions to non-linear nonlocal operators on homogeneous groups.

SAMUEL ZEITLER, Carnegie Mellon University