

# Analysis and Probability Seminar

Tuesday, November 1, 2016 at 3:00 p.m. in Yost 306

**Speaker:** Arnaud Marsiglietti, Postdoctoral Associate in Mathematics, California Institute of Technology

**Title:** The entropy power inequality for the Renyi entropy

**Abstract:** The entropy power inequality, which is fundamental in Information Theory, states that for every independent continuous random vector  $X, Y$  in  $\mathbb{R}^n$ , one has

$$N(X + Y) \geq N(X) + N(Y).$$

Here  $N(X)$  denotes the entropy power of  $X$ , defined as  $N(X) = e^{\frac{2}{n}h(X)}$ , where  $h(X)$  is the Shannon entropy of  $X$ . This inequality has found applications in other fields, such as the concentration of measure phenomenon, and has deep connections with convex geometry.

In this talk, we will see that the entropy power inequality can be extended to the Renyi entropy.