1139-35-96 **Wenxiong Chen*** (wchen@yu.edu), 2495 Amsterdam Av., New York, NY 10033, and **Congming Li** and **Shijie Qi**. *A Hopf lemma and regularity for the fractional p-Laplacians.*

In this talk, we will present our recent results on the fractional p-Laplacian.

One is a Hopf type lemma which states that, on a domain Ω with smooth boundary, if

$$\begin{cases} (-\Delta)_p^s u(x) \geq 0 \text{ and } u(x) > 0 & x \in \Omega \\ u(x) = 0 & x \in \partial\Omega, \end{cases}$$

then

$$\lim_{x \to \partial\Omega} \frac{u(x)}{dist^s(x, \partial\Omega)} \geq c_o > 0.$$

The other is concerning the regularity of $(-\Delta)_p^s u(x)$. We prove that if $u(x)$ is smooth and if

$$p > \frac{3}{2-s}.$$

Then $(-\Delta)_p^s u(x)$ is in C^1.

We also show that the above condition is sharp in the sense that if it is violated, then there are counter examples of smooth functions u for which $(-\Delta)_p^s u(x)$ is not in C^1. (Received February 02, 2018)