1129-35-246 **Guanfeng Li*** (liguanfeng@hit.edu.cn). *The symmetry of solutions for nonlinear fractional order system of m equations.* Preliminary report.

In this paper, we consider the system of m equations involving fully nonlinear nonlocal operators

$$\begin{cases} F_{\alpha_1}(u_1(x)) \equiv C_{n,\alpha_1} PV \int_{\mathbb{R}^n} \frac{G_1(u_1(x)-u_1(z))}{|x-z|^{n+\alpha_1}} dz = f_1(x, u_1, u_2, \cdots, u_m), \\ \qquad \vdots \\ F_{\alpha_m}(u_m(x)) \equiv C_{n,\alpha_m} PV \int_{\mathbb{R}^n} \frac{G_m(u_m(x)-u_m(z))}{|x-z|^{n+\alpha_m}} dz = f_m(x, u_1, u_2, \cdots, u_m). \end{cases}$$

where $0 < \alpha_i < 2$, $f_i(x, t_1, \cdots, t_m) : \mathbb{R}^n \times \mathbb{R}^m \to \mathbb{R}$ are functions satisfying some monotonicity assumption, $i = 1, 2, \cdots, m$ and m is any positive integer.

We will establish the radial symmetry and monotonicity for positive solutions to the nonlinear fractional order system of m equations in the unit ball and in the whole space $\mathbb{R}^n$, as well as non-existence of solutions on a half space. We will use the method of moving planes to prove our results. As key ingredients for carrying on the method of moving planes, maximum principle, narrow region principle and decay at infinity will be established. (Received March 17, 2017)