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Wenxiong Chen* (wchen@yu.edu), **Yanqin Fang** and **Ray Yang**. *Dirichlet Problems for Fractional Laplacians*.

Let Ω be the unit ball $B_1(0)$ in R^n or be the upper half space R_+^n . Assume $0 < \alpha < 2$. We consider the following Dirichlet problem for semi-linear equations involving fractional Laplacians:

$$\begin{cases} (-\Delta)^{\alpha/2}u = f(u), & x \in \Omega, \\ u = 0, & x \notin \Omega. \end{cases} \quad (1)$$

Instead of applying the commonly used extension method, we study corresponding integral equations directly in the domain Ω . Using the method of moving planes in integral forms, we obtain radial symmetry (when $\Omega = B_1(0)$) and non-existence (when $\Omega = R_+^n$) of positive solutions.

We will also mention Liouville type theorems for polyharmonic operators with Dirichlet or Navier boundary conditions on upper half spaces. (Received February 11, 2013)