

Boundary blow up solutions for fractional elliptic equations

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Abstract

In this talk we discuss existence of boundary blow up solutions for some fractional elliptic equations including

$$\begin{aligned}(-\Delta)^\alpha u + u^p &= f \text{ in } \Omega, \\ u &= g \text{ on } \Omega^c, \\ \lim_{x \in \Omega, x \rightarrow \partial\Omega} u(x) &= \infty,\end{aligned}$$

where Ω is a bounded domain of class C^2 , $\alpha \in (0, 1)$ and the functions $f : \Omega \rightarrow \mathbb{R}$ and $g : \mathbb{R}^N \setminus \bar{\Omega} \rightarrow \mathbb{R}$ are continuous. We obtain existence and boundary behavior of solution under different hypothesis on f and g . We also prove uniqueness of positive solutions. This work is in collaboration with Huyuan Chen and Alexander Quaas.