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**Tingting Huan\*** (thuan@holycross.edu), One College Street, P.O Box 48A, Worcester, MA 01610. *Reaction Diffusion Equations with Fractional Laplacian.*

We consider the traveling fronts of the reaction diffusion equation:

$$u_t + (-\Delta)^s u = f(u), \quad \text{in } \mathbb{R} \times \mathbb{R},$$

for  $f \in C^1(\mathbb{R})$ . We show the nonexistence of traveling fronts in the combustion model with fractional Laplacian  $(-\Delta)^s$  when  $s \in (0, 1/2]$ . Our method can be used to give a direct and simple proof of the nonexistence of traveling fronts for the usual Fisher-KPP nonlinearity. Also we prove the existence and nonexistence of traveling waves solutions for different ranges of the fractional power  $s$  for the generalized Fisher-KPP type model. When considering the Allen-Cahn type nonlinearity, we show the approach of the solution to the traveling front for a large range of initial value problems. (Received September 22, 2015)