

Seminario de análisis matemático y aplicaciones
Analisi matematikoa eta aplikazioak mintegia

Nonlocal porous medium type equations

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ABSTRACT: We present some recent results on two nonlocal generalizations of the porous medium equation $u_t = \Delta u^m$.

For the first model, $u_t = \nabla(u^{m-1}\nabla(-\Delta)^{-s})$, we construct a class of weak solutions for which the property of finite/infinite speed of propagation is discussed according to the parameter $m > 1$.

The second model $u_t + (-\Delta)^s u^m = 0$ was more investigated in the literature and we remind the main qualitative properties of solutions.

We conclude with a transformation formula between self-similar solutions of the two classes of equations considered.

References

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- [2] D. STAN, F. DEL TESO, AND J. L. VÁZQUEZ, *Finite and infinite speed of propagation for porous medium equations with nonlocal pressure*, *Journal of Differential Equations* **260**, **2** (2016), 1154–1199

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