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**Patricio Luis Felmer\*** (pfelmer@dim.uchile.cl), Avenida Blanco Encalada 2120, Santiago, Santiago, Chile. *Contributions to non-linear fractional elliptic equations.*

In this talk we review some recent results on the analysis of various problems on non-linear equations involving fractional elliptic operators. We start with the study of some limiting theorems for the heat equation with a nonlinear fractional operator, when the order of the operator approaches zero. These results are proved in the context of viscosity solutions, with an appropriate use of the comparison principle and barrier functions for bounded domains. With a related approach we then present some results for the existence of boundary blow-up solutions for these non-linear fractional elliptic equations in bounded domains, making use of the same basic approach with super and sub-solutions and barrier functions. We conclude this talk discussing another class of problems by assuming that the fractional operator has a variational formulation, providing a much richer structure to the nonlinear equations. We present applications to the non-linear Schrödinger Equation with the fractional laplacian and also some regional operators, including concentration phenomena occurring in this setting. (Received May 14, 2013)