1059-35-107 **Ionut Florescu*** (`ifloresc@stevens.edu`), Castle Point on the Hudson, Department of Mathematical Sciences, Stevens Institute of Technology, Hoboken, NJ 07030, and **Maria C Mariani** (`mcmariani@utep.edu`), Dept. of Mathematical Sciences, El Paso, TX 79968. *Study of solution for a PIDE relevant for Mathematical finance using upper and lower solutions.* Preliminary report.

One of the most studied problem in Finance is option pricing when the underlying equity follows a stochastic process. If the underlying process is a regular diffusion the problem is reduced to solving a Partial Differential Equation. However, if the underlying process possesses jumps (or more general a Lévy component) an integral term arises in the defining equation due to the associated Levy measure. This produces a so called Partial Integro-Differential Equation (PIDE). Problems of existence, uniqueness and determination of solutions for such equations are still open. In this report we will present a proof of existence on general domains under suitable conditions on the integral operator. The proof is based on the method of upper and lower solutions and may give rise to an algorithm to approximate the solution of PIDE. A relevant example is also provided. The work is based on the collaboration with Prof. Maria C. Mariani from University of Texas at El Paso. (Received February 19, 2010)