5007-35-275 **Diana Assaely León Velasco*** (assaely86@gmail.com), iztapalapa, distrito f, Mexico. *Study of the Controllability for parabolic Partial Differential Equations.*

In recent years important progresses have been done in the context of numerical approximation of controllability problems for pde's. it is by now well known that,often, numerical approximation schemes that are stable for solving initial-boundary value problems, develop instabilities when applied to controllability problems, due to the presence of high frequency numerical solutions.

The goal of this work is introduce some elements and numerical examples in 1-D of the theory of distributed and pointwise control for linear diffusion equations. We consider a system whose state is given by the solution y to a pde, and which contains control functions v. The state equation is written as

$$\frac{\partial y}{\partial t} + \mathcal{A}(v) = \mathcal{B}v \tag{1}$$

where y is a scalar valued function, $\mathcal{A}$ is a partial differential operator, and $\mathcal{B}$ maps the "space of controls" into the "state space". v can be either applied inside the domain $\Omega \subset \mathbf{R}^d$ where (1) is considered.

The control theory is a complementary tool to solve the problems of dynamic optimization, using the calculus variational theory and the optimality principle (Received May 13, 2013)