FINITE DIFFERENCE SCHEME FOR 2D PARABOLIC PROBLEM MODELLING ELECTROSTATIC MICRO-ELECTROMECHANICAL SYSTEMS

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Abstract. This paper is dedicated to study the fully discretized semi implicit and implicit schemes of a 2D parabolic semi linear problem modeling MEMS devices. Starting with the analysis of the semi-implicit scheme, we proved the existence of the discrete solution which converges under certain conditions on the voltage lambda. On the other hand, we consider a fully implicit scheme, we proved the existence of the discrete solution, which also converges to the stationary solution under certain conditions on the voltage lambda and on the time step. Finally, we did some numerical simulations which show the behavior of the solution.

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