962-44-725 **Gunter Lumer*** (lyane.bouchez@umh.ac.be), Institut de Mathematique et d'Informatique, 7000 Mons, Belgium. *Generalized functions and Laplace transform in stabilization by boundary control.* Preliminary report.

We consider perturbations u (starting at $t = 0$) in general and concrete systems S, caused by rapidly varying boundary inputs. We study boundary controls starting at $t = t_1 > 0$ having as objective to obtain either:

(i) total stabilization in finite time τ steering u into u_1 after t_1, with $u_1 = 0$ after $t_1 + \tau$;

(ii) "high order" exponential decay after $t_1 + \tau$, estimating τ needed to bring maximum amplitudes below $\epsilon > 0$ given with preassigned order of exponential decay, for u_1 after $t_1 + \tau$.

We show that together with regular functions, distributions and hyperfunctions can be used to obtain "instantaneous" stabilizing effects.

In (i) and (ii) (besides PDE and semigroups methods), Laplace transforms $\mathcal{L}\psi$ of regular or generalized functions ψ, and their behavior on the spectra of operators A associated to systems S as mentioned above, play an essential role. (Received September 24, 2000)