

THE HEAT KERNEL AND ITS ASYMPTOTIC ON THE DIAGONAL FOR AN OPTIMAL CONTROL PROBLEM WITH DRIFT

Elisa Paoli

SISSA, Trieste, Italy

`epaoli@sissa.it`

In this talk we will consider an optimal control problem defined on the n dimensional Euclidean space depending linearly on $k \leq n$ controls, with a drift vector field and a quadratic cost. We will introduce a related hypoelliptic differential operator, being interested in the fundamental solution and its asymptotic expansion on the diagonal for small time. In particular, in the linear case we will show the explicit solution and compute the first terms of the asymptotic. We will then use these results to investigate the general case, and we will show the first terms of the asymptotic in some cases.