

UNE INTRODUCTION À LA THÉORIE GÉNÉRALE DE
L'APPROXIMATION QUADRATIQUE D'UNE APPLICATION LINÉAIRE

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Abstract: The linear statistical inference constitutes one of the more usual frameworks for quadratic approximation of linear mappings. Generally, the set of observations is a Euclidean space R^d , and the selected risk function is the trace of expectation of a quadratic loss function. In fact, most common notions which one can manipulate there (Gauss-Markov's estimation for example) are totally independent of all but linear structures on the space E of the observations.

We would like to introduce here the general problem of the quadratic approximation of a linear mapping of a finite-dimensional vector space E into another finite-dimensional vector space F , including that of the admissibility of solutions, without any other hypothesis other than the spaces E and F each being placed in separate duality with another vector space. We show how the positivity of the considered operators and the provision of a Euclidean structure on the image space F is sometimes necessary to assure the non-emptiness of the set of solutions. We would like to end by giving, within this general framework, a proof of an extension of a fundamental L. R. LaMotte [5] theorem based on the Hahn-Banach theorem.

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