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A general approach of least

squares estimation and optimal

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(Submitted on 27 May 2013)

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Benjamin Lenoir

The least squares method allows fitting parameters of a mathematical model from experimental data. This article proposes a general approach of this method. After introducing the method and giving a formal definition, the transitivity of the method as well as numerical considerations are discussed. Then two particular cases are considered: the usual least squares method and the Generalized Least Squares method. In both cases, the estimator and its variance are characterized in the time domain and in the Fourier domain. Finally, the equivalence of the Generalized Least Squares method and the optimal filtering technique using a matched filter is established.

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