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Ridha Sfaxi* (ridhasfaxi@yahoo.fr), Institut Supérieur de Gestion, Avenue Habib Jilani, 6002 Gabes, Tunisia. *On Some Inverse Problem Leading to a Second-Order Linear Functional.*

A linear functional L is called positive-definite, if and only if $\langle L, p^2 \rangle > 0$, for all non-zero polynomial with real coefficients p . On certain regularity condition, it is well-known that the product of a positive-definite linear functional by a polynomial is still a positive-definite linear functional. This tool was used by Christoffel in 1858 and is considered a famous construction process. In this paper, we provide another construction process of a positive-definite linear functional from a positive-definite linear functional data. Indeed, for any non zero real ϵ and any positive-definite linear functional L , we show that the linear functional L_ϵ satisfying $L_\epsilon - \epsilon L'_\epsilon = L$ is also positive definite. This process allows us to construct a second-order positive definite linear functionals from semiclassical positive-definite linear functionals. However, we apply the above result to an example where we establish the Rodrigues' formula. (Received September 26, 2006)