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*On some applications of  $H$ -differentiability to optimization and complementarity problems*

In this talk, we consider two applications of  $H$ -differentiability. In the first application, we derive a necessary optimality condition for a local minimum of an  $H$ -differentiable function. In the second application, we consider a non-linear complementarity problem corresponding to an  $H$ -differentiable function  $f$  and show how, under appropriate conditions on an  $H$ -differential of  $f$ , minimizing a merit function corresponding to  $f$  leads to a solution of the non-linear complementarity problem. These two applications were motivated by numerous studies carried out for  $C^1$ , convex, locally Lipschitzian, and semismooth function by various researchers.