

Second order asymptotic analysis

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Asymptotic analysis is an important tool for the study of the behavior of sets and functions at infinity. Recently, second order asymptotic sets and functions were introduced and applied to scalar and vector optimization problems [1]. In this talk, we continue the study of these concepts. After presenting some general properties, we will focus our attention to the convex case. Characterizations of second order directions for convex sets will be given. These will be used for the derivation of some basic properties of second order asymptotic cones. Using some monotonicity properties of convex functions, we will also obtain formulas that permit an easy computation of second order asymptotic functions of convex functions. We will see that the use of second order asymptotic functions can provide a finer description of the behavior of functions at infinity, than those achieved by the usual (first order) asymptotic functions.

References

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