

Title: On jet-convex functions and their tensor products

Vladimir Shikhman, UCL

Abstract: We introduce necessary and sufficient conditions for the tensor product of two convex functions to be convex. For our analysis we introduce the notions of true convexity, jet-convexity, true jet-convexity as well as true log-convexity. The links between jet-convex and log-convex functions are elaborated. As an algebraic tool, we introduce the jet product of two symmetric matrices and study some of its properties. We illustrate our results by an application from global optimization, where a convex underestimator for the tensor product of two functions is constructed as the tensor product of convex underestimators of the single functions.

(in collaboration with Oliver Stein)