Introduction to piecewise differentiable equations

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Abstrak

This brief provides an elementary introduction to the theory of piecewise differentiable functions with an emphasis on differentiable equations. In the first chapter, two sample problems are used to motivate the study of this theory. The presentation is then developed using two basic tools for the analysis of piecewise differentiable functions. the Bouligand derivative as the nonsmooth analogue of the classical derivative concept and the theory of piecewise affine functions as the combinatorial tool for the study of this approximation function. In the end, the results are combined to develop inverse and implicit function theorems for piecewise differentiable equations.