

Nonsmooth Problems with Applications in Mechanics
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**On Vector Measures Associated to BV Functions
and Perturbed Sweeping Processes**

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Abstract: We prove the existence of a solution for a perturbed sweeping process associated to a set-valued map $C : I \rightarrow 2^H$ and a perturbation $b : I \times H \rightarrow H$, where, I is the real line interval $[0; T]$ and H is an Hilbert space. We assume mainly that C has a bounded retraction, b is measurable with respect to its first argument and the family of functions $\{f(t; \cdot) : t \in I\}$ is uniformly equicontinuous. We use differential measures associated to BV functions. The proof is based on Moreau's inequalities requiring integration of vector valued functions with respect to vector measures through bilinear functions.