Monotonically Controlled Mappings

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Abstract. We study classes of mappings between finite and infinite dimensional Banach spaces that are monotone and mappings which are differences of monotone mappings (DM). We prove a Radó–Reichelderfer estimate for monotone mappings in finite dimensional spaces that remains valid for DM mappings. This provides an alternative proof of the Fréchet differentiability a.e. of DM mappings. We establish a Morrey-type estimate for the distributional derivative of monotone mappings. We prove that a locally DM mapping between finite dimensional spaces is also globally DM. We introduce and study a new class of the so-called UDM mappings between Banach spaces, which generalizes the concept of curves of finite variation.

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