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Multiple valued functions and integral currents

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Abstract. We prove several results on Almgren's multiple valued functions and their links to integral currents. In particular, we give a simple proof of the fact that a Lipschitz multiple valued map naturally defines an integer rectifiable current; we derive explicit formulae for the boundary, the mass and the first variations along certain specific vector-fields; and exploit this connection to derive a delicate reparametrization property for multiple valued functions. These results play a crucial role in our new proof of the partial regularity of area minimizing currents [5–7].

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