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The Calderón-Zygmund theory for elliptic problems with measure data

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To the memory of Vic Mizel, mathematician and gentleman

Abstract. We consider non-linear elliptic equations having a measure in the right-hand side, of the type div $a(x, Du) = \mu$, and prove differentiability and integrability results for solutions. New estimates in Marcinkiewicz spaces are also given, and the impact of the measure datum density properties on the regularity of solutions is analyzed in order to build a suitable Calderón-Zygmund theory for the problem. All the regularity results presented in this paper are provided together with explicit local a priori estimates.

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