Nonlinear elliptic equations
with measure valued absorption potentials

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Abstract. We study the semilinear elliptic equation $-\Delta u + g(u)\sigma = \mu$ with Dirichlet boundary conditions in a smooth bounded domain where σ is a nonnegative Radon measure, μ a Radon measure and g is an absorbing nonlinearity. We show that the problem is well posed if we assume that σ belongs to some Morrey class. Under this condition we give a general existence result for any bounded measure provided g satisfies a subcritical integral assumption. We study also the supercritical case when $g(r) = |r|^{q-1} r$, with $q > 1$ and μ satisfies an absolute continuity condition expressed in terms of some capacities involving σ.

Mathematics Subject Classification (2010): 35J61 (primary); 31B15, 28C05 (secondary).