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Adisak Seesanea* (asrt8@mail.missouri.edu), Department of Mathematics, University of Missouri, Columbia, MO 65211. *Finite energy solutions to inhomogeneous nonlinear elliptic equations with sub-natural growth terms.*

We obtain necessary and sufficient conditions for the existence of a positive finite energy solution to the inhomogeneous quasilinear elliptic equation

$$-\Delta_p u = \sigma u^q + \mu \quad \text{on } \mathbb{R}^n$$

in the sub-natural growth case $0 < q < p - 1$, where Δ_p ($1 < p < \infty$) is the p -Laplacian, and σ, μ are positive Borel measures on \mathbb{R}^n . Uniqueness of such a solution is established as well.

Similar inhomogeneous problems in the sublinear case $0 < q < 1$ are treated for the fractional Laplace operator $(-\Delta)^\alpha$ in place of $-\Delta_p$, on \mathbb{R}^n for $0 < \alpha < \frac{n}{2}$, and on an arbitrary domain $\Omega \subset \mathbb{R}^n$ with positive Green's function in the classical case $\alpha = 1$. This is joint work with Igor Verbitsky. (Received August 06, 2017)