

Correction

Lenhart S (1982) Integro-differential Operators Associated with Diffusion Processes with Jumps. Appl Math Optim 9:177–191

Prof. P. L. Lions pointed out to me that the technique of proof for the gradient L^∞ estimate, Lemma 2.2, does not work under the stated assumption

$$\int_{|z|<1} |z|^2 m(dz) + \int_{|z|>1} |z| m(dz) < \infty. \quad (1)$$

The technique does work under a stronger assumption

$$\int_{\mathbb{R}^n} |z| m(dz) < \infty. \quad (2)$$

Note that the main result of $W_{loc}^{2,p}$ regularity and existence does not depend on Lemma 2.2 and remains valid under assumption (1).

For a proof of the gradient estimate under assumption (1), see “Existence and Regularity Results for Solutions of Second-Order, Elliptic, Integrodifferential Operators” by F. Gimbert and P. L. Lions.

