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ERRATUM TO "LOWER SEMICONTINUOUS ENVELOPES IN $W^{1,1} \times L^p$"

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In this note, we correct a mistake present in [2]. The theorems stated remain valid but the proof of Theorem 11 should be slightly modified. Namely, in Step 4, the sequence $v_{s,t}^{n,\lambda}$ has to be defined in a different way to obtain the weak convergence in L^p stated in condition (17).

In detail, in the proof of Theorem 11 define

$$v_{s,t}^{n,\lambda}(x) := \tau_{L_n}(v_n)(x) + \varphi_{s,t}\left(\hat{w}_n(x;\lambda)\right)\left(v_n(x) - \tau_{L_n}(v_n(x))\right),$$

thus ensuring the second convergence in formula (17). Replace also formula (20) by

$$-C + \frac{1}{C}|\tau_{L_n}(v_n)(x)|^p \leq h_n(x, w_0(x), \tau_{L_n}(v_n(x)), \nabla w_0(x)) \leq C(1 + |\tau_{L_n}(v_n(x))|^p).$$

Here the sequence $\tau_{L_n}(v_n)$ is obtained from v_n according to the Decomposition Lemma below, whose proof can be found in [1, Lemma 8.13].

LEMMA 1. *Let $1 < p < +\infty$, and let $\{v_n\}$ be a bounded sequence in $L^p(\Omega;\mathbb{R}^d)$. For $L > 0$ consider the truncation $\tau_L : \mathbb{R}^d \to \mathbb{R}^d$ given by*

$$\tau_L(z) := \begin{cases} z & \text{if } |z| \leq L, \\ L\dfrac{z}{|z|} & \text{if } |z| > L. \end{cases}$$

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Then there exists a subsequence of $\{v_n\}$ *(not relabeled) and an increasing sequence* $\{L_n\}$, *with* $L_n \to +\infty$, *such that the truncated sequence* $\{\tau_{L_n} \circ v_n\}$ *is p-equi-integrable and* $\|\tau_{L_n} \circ v_n - v_n\|_{L^q(\Omega)} \to 0$ *for all* $1 \leq q < p$.

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References

[1] I. Fonseca and G. Leoni, *Modern Methods in the Calculus of Variations:* L^p *Spaces*, Springer, 2007.

[2] A. M. Ribeiro and E. Zappale, *Lower semicontinuous envelopes in* $W^{1,1} \times L^p$, in: Banach Center Publ. 101, Inst. Math., Polish Acad. Sci., 2014, 187–206.