Erratum

Erratum to: Mather Measures Associated with a Class of Bloch Wave Functions

Olga Bernardi, Alberto Parmeggiani and Lorenzo Zanelli

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Regrettably, we erroneously wrote the norm $\|\cdot\|_{C^{0,1}}$ for the norm $\|\cdot\|_{C^1}$. The norm has to be corrected throughout the paper, as well as the reference to $C^{0,1}$ -critical subsolutions that has to be replaced by $C^{1,1}$ -critical subsolutions (whose existence is granted by a result of Bernard [1], reference [9] in the paper). In other words, in the paper *the wave functions are constructed in terms of suitable C^k -phases which approximate $C^{1,1}$ -critical subsolutions of the Hamilton–Jacobi equation*. Hence:

- The norm has to be corrected on page 1810 l. 13; page 1824 formulas (4.22) and (4.25), and lines 2 and 5 below (4.25); page 1825 formula (4.26), (ii) in Def. 4.12, l. 1 below formula (4.27); page 1836 l. 2 below formula (5.14) and bottom line.
- A $C^{0,1}$ -critical subsolution has to be replaced by a $C^{1,1}$ -critical subsolution on page 1810 l. 5; page 1811 l. 1 below formula (1.13); page 1816 l. 1 of Prop. 3.1; page 1824 l. 2 above formula (4.22), in the formula (4.24) and (4.25); page 1825 formula (4.26), l. 3 of Def. 4.12 and l.1 below formula (4.27); page 1836 formula (5.13), (5.14), l. 2 and l. 4 below (5.14), l. 1 above (5.15), (5.15), (5.16) and l. 2 below (5.16).

Unfortunately there are other imprecisions, that we now list:

- Page 1813 lines 8 and 11 below formula (2.4): x has of course to be replaced by x_0 .
- Page 1813 l. 11 of point 3: “weak KAM solutions of negative type solve the H–J equation in the viscosity sense”.
- Page 1816 line 4 from bottom of page: $C^{0,1}$ has of course to be replaced by C^1 so as to read “the density of C^∞ into C^1 ”.
- Page 1816 line 3 from bottom of page: the convergence of $\nabla_x g_k(P, \cdot)$ to $\nabla_x v(P, \cdot)$ is in the C^0 topology.
- Page 1820, the correct statement of Thm. 4.5 is: *For $0 < \alpha < 1$ arbitrarily fixed, for all $P \in \mathbb{R}^n$. we have the inequalities*

$$\bar{H}(P) - 2\hbar^\alpha \leq \bar{H}_\hbar(P) \leq \bar{H}(P) \quad (4.12)$$

for all $0 \leq \hbar \leq 1$.

- Page 1822 l. 3 below formula (4.18): “ $\forall 0 < \alpha < 1$ ” has to be replaced by “ $0 < \alpha < 1$ ”.
- Page 1824 lines 1 and 2 below formula (4.22): “This fact is always possible thanks to the density of $C^k(\mathbb{T}^n; \mathbb{R})$ in $C^1(\mathbb{T}^n; \mathbb{R})$ ”.
- Page 1825 line 4 of Def. 4.12: “ $\forall 0 < \alpha < 1$ ” has to be replaced by “for some $0 < \alpha < 1$ ”.
- Page 1825 line 1 of Prop. 4.15: “and all $0 < \alpha < 1$ ” has to be deleted.
- Page 1828 Lemma 5.4: conclusion (a) of the lemma should be stated more precisely as

$$(a) \quad \varepsilon^n \sum_{\alpha \in \mathbb{Z}^n} f(\alpha) e^{i\alpha \cdot y} = (2\pi)^n (\mathcal{F}^{-1} f)(y) + F(\varepsilon, y), \quad \forall y \in \varepsilon^{-1} Q_n;$$

$$\forall N \in \mathbb{Z}_+ \quad \exists C_{f,N} \text{ s.t. } \|F(\varepsilon, \cdot)\|_{L^\infty(\varepsilon^{-1} Q_n)} \leq C_{f,N} \varepsilon^N.$$

- Page 1828 l. 1 above formula (5.4): “the error term $F(\varepsilon, y)$, for $y \in \varepsilon^{-1} Q_n$, is given by ...”
- Page 1832 line 5 from bottom of page: $\text{vol}(\text{supp } F(\hbar, \cdot))$ has to be replaced by $\text{vol}(D_{\hbar,n})$; the norm is $\|F(\hbar, \cdot)\|_{L^\infty(D_{\hbar,n})}$.
- Page 1834 line 6 from bottom of page: the norm is $\|F(\hbar, \cdot)\|_{L^\infty(D_{\hbar,n})}$.
- Page 1835 lines 5 and 6 of the proof of Thm. 1.2: the $C^{0,1}$ -convergence has of course to be replaced by the C^1 -convergence; recall that the critical subsolutions referred to are $C^{1,1}$ -critical subsolutions; lines 10–12 of the same proof should be rephrased as: “... all have the same support, namely $\mathbb{T}^n$, and so they form in fact a tight family of probability measures (see [13]). Thus, an application of the Prohorov Theorem (see for example Thm. 5.1 of [13]) ensures there exists a weak* convergent sequence ...”
- Page 1836 line 7 below formula (5.14): of course, $C^{0,1}$ has to be replaced by C^1 so as to read “by using the density of $C^\infty(\mathbb{T}^n; \mathbb{R})$ in $C^1(\mathbb{T}^n; \mathbb{R})$ ”.
- Page 1836 bottom line: P has to be replaced by $|P|$.

Reference

- [1] Bernard, P.: Existence of $C^{1,1}$ critical sub-solutions of the Hamilton–Jacobi equation on compact manifolds. *Ann. Sci. École Norm. Sup. (4)* **40**(3), 445–452 (2007)

Olga Bernardi
Department of Mathematics
University of Padova
Via Trieste, 63
35121 Padova, Italy
e-mail: obern@math.unipd.it

Alberto Parmeggiani and Lorenzo Zanelli
Department of Mathematics
University of Bologna
Piazza di Porta San Donato, 5
40126 Bologna, Italy
e-mail: alberto.parmeggiani@unibo.it;
lorenzo.zanelli@unibo.it