Differential and Integral Equations Volume 24, Numbers 1-2 (2011), 199–200

ERRATUM
NON-UNIFORM DEPENDENCE ON INITIAL DATA FOR THE CH EQUATION ON THE LINE

A. Alexandrou Himonas and Carlos Kenig

We are thankful to Yanggeng Fu for pointing out an error in the proof of Theorem 1 in [1] which is only correct in the range $s > 3/2$. Thus $s > 1$ in the abstract and statement of Theorem 1 should be replaced with $s > 3/2$.

In Lemma 5 inequality (4.3) is proved only for $s > 3/2$. Lemma 6 is proved only for $s > 3/2$. In the title of section 6, $s > 1$ should be replaced by $s > 3/2$. The lines between (6.1) and (6.4) should be replaced by:

"Furthermore, since our s-dependent initial data $u^{\pm,\lambda}(0)$ belong to every Sobolev space they do belong to $H^{[s]+2}(\mathbb{R})$. Since $s > 3/2$ by the argument in the last remark of section 2 we obtain a companion estimate to (6.1)

$$\|u_{\pm 1,\lambda}(t)\|_{H^{[s]+2}(\mathbb{R})} \lesssim \|u^{\pm 1,\lambda}(0)\|_{H^{[s]+2}(\mathbb{R})}, \quad 0 \le t \le T. \tag{6.2}$$

Now let $k = [s] + 2$. If λ is large enough then from (4.2) and (4.1) we have

$$\begin{aligned} \|u^{\pm 1,\lambda}(t)\|_{H^k(\mathbb{R})} &\le \|u_{\ell,\pm 1,\lambda}(t)\|_{H^k(\mathbb{R})} + \lambda^{-\frac{1}{2}\delta - s}\|\varphi(\frac{x}{\lambda^\delta})\cos(\lambda x - \lambda t)\|_{H^k(\mathbb{R})} \\ &\lesssim \lambda^{-1+\frac{1}{2}\delta} + \lambda^{k-s}\cdot\lambda^{-\frac{1}{2}\delta - k}\|\varphi(\frac{x}{\lambda^\delta})\cos(\lambda x - \lambda t)\|_{H^k(\mathbb{R})} \\ &\lesssim \lambda^{-1+\frac{1}{2}\delta} + \lambda^{k-s}\|\varphi\|_{L^2(\mathbb{R})}, \end{aligned}$$

which gives

$$\|u^{\pm 1,\lambda}(t)\|_{H^k(\mathbb{R})} \lesssim \lambda^{k-s}, \quad \text{hence by (6.2)} \quad \|u_{\pm 1,\lambda}(t)\|_{H^k(\mathbb{R})} \lesssim \lambda^{k-s}. \tag{6.3}$$

Therefore, from (6.3) we obtain the following estimate for the H^k-norm of the difference of $u_{\pm 1,\lambda}$ and $u_{\pm 1,\lambda}$"

The sentence after (6.9) should have $s > 3/2$ instead of $s > 1$.

(A full version of the corrected paper is available on the arXiv.)

Accepted for publication: September 2010.
AMS Subject Classifications: 35Q53.