Erratum

Erratum to: Self-similar Solutions with Fat Tails for Smoluchowski's Coagulation Equation with Locally Bounded Kernels

B. Niethammer, J. J. L. Velázquez

Institute of Applied Mathematics, University of Bonn, Endenicher Allee 60, 53115 Bonn, Germany.
 E-mail: niethammer@iam.uni-bonn.de

Received: 13 November 2012 / Accepted: 19 November 2012

Published online: 18 January 2013 – © Springer-Verlag Berlin Heidelberg 2013

Commun. Math. Phys. **318**, no. 2, 505–532 (2013)

We apologize to the readers for the following serious misprint in the above article that appears in the abstract and in the statement of the main result. Our result on the existence of self-similar solutions with fat tails is not valid for all $\gamma \in (-\infty, 1)$ but only for $\gamma \in [0, 1)$. This is also in accordance with the title, because obviously only for the latter values of γ the kernel is locally bounded.

We would also like to take this opportunity to correct a few minor mistakes and typos in the remainder of the paper.

1. In the proof of Lemma 2.2 the estimate of $\mathcal{Q}[H](X, t)$ in the norm $\|\cdot\|_{\mathcal{X}_\rho}$ goes as follows:

Due to (9) and (12) we find

$$\begin{aligned} & \int_0^R \mathcal{Q}[H](X, t) dX \\ & \leq C \int_0^R \int_{\max(\lambda/2, X\lambda/2)}^{X(1-\lambda/2)} \frac{Y^\gamma + (X-Y)^\gamma}{(X-Y)} H(X-Y, t) H(Y, t) dY dX \\ & \leq C \int_{\lambda/2}^R \int_{Y\lambda/2}^R \frac{Y^\gamma + X^\gamma}{X} H(X) dX H(Y) dY. \end{aligned}$$

If $R \leq 1$ the above estimate implies that

$$\int_0^R \mathcal{Q}[H](X, t) dX \leq C_\lambda R^\gamma \left(R^{1-\rho}\right)^2 \leq C_\lambda R^{1-\rho}.$$

To treat the case $R > 1$, recall that due to $H(\cdot, t) \in \mathcal{X}_\rho$, estimate (29) and the fact that $\gamma < \rho$ we have that

$$\int_{Y\lambda/2}^R \frac{H(X)}{X} dX \leq C_\lambda Y^{-\rho} \quad \text{and} \quad \int_{\lambda^2/4}^\infty \frac{H(X)}{X^{1-\gamma}} dX \leq C_\lambda.$$

This implies, since $\gamma - \rho < 0$, that

$$\begin{aligned} & \int_0^R \mathcal{Q}[H](X, t) dX \\ & \leq C \left(\int_{\lambda/2}^R Y^\gamma H(Y) \int_{Y\lambda/2}^R \frac{H(X)}{X} dX dY + \int_{\lambda/2}^R H(Y) \int_{\lambda^2/4}^R \frac{H(X)}{X^{1-\gamma}} dX dY \right) \\ & \leq C_\lambda \left(\int_{\lambda/2}^R Y^{\gamma-\rho} H(Y) dY + R^{1-\rho} \right) \\ & \leq C_\lambda R^{1-\rho} \end{aligned}$$

and thus

$$\|\mathcal{Q}[H](\cdot, t)\|_{\mathcal{X}_\rho} \leq C_\lambda. \quad (1)$$

2. The integral in (42) should be replaced by $-\beta\rho\psi(X, s)$.
3. In the proof of Lemma 2.11 it might be convenient to note that K_λ vanishes for $X, Z \leq \lambda/2$, but also for $Z \leq \frac{\lambda}{2-\lambda}X$ etc..
4. In the proof of Lemma 3.3 we set $\tau = t - s$ instead of $s - t$.
5. In the proof of Proposition 3.4 the constant $\Gamma(1-a)$ has to be replaced in the solution formula for $\hat{W}(p)$ by $\Gamma(1-a)/a$.

Communicated by P. Constantin