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# Correction to "Hydrodynamic Equations for Attractive Particle Systems on $\mathbb{Z}$," *J. Stat. Phys.* 47:265 (1987)

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The second part of the proof of Lemma 3.3 in ref. 1 is wrong. This note explains how to correct it. After the sentence "It remains to prove that $\lambda_v = \delta_\beta$ if $v > v_c$ $(v \in D)$" on p. 277, the proof should be completed with:

We repeat the argument given for $v < v_c$. That is we take $u$ and $v$ such that $v_c < u < v$ and $\bar{v} < v$. Recalling Eq. (3.12):

$$(v-u)\,\alpha \leqslant F(v) - F(u) \leqslant (v-u)\,\beta \tag{3.12}$$

with the above choice of $u$, $v$ and since $v > \bar{v}$ we then have $\mu_v = \nu_\beta$ and

$$v\beta - \gamma\varphi(\beta) - u\int_\alpha^\beta \rho\, d\lambda_u(\rho) + \gamma\int_\alpha^\beta \varphi(\rho)\,\lambda_u(d\rho) \leqslant (v-u)\,\beta$$

From this last equation we write

$$u\int_\alpha^\beta (\beta-\rho)\,\lambda_u(d\rho) \leqslant \gamma\int_\alpha^\beta (\varphi(\beta)-\varphi(\rho))\,\lambda_u(d\rho)$$

but we have that $\varphi$ is concave so that for each $\rho \in [\alpha, \beta)$

$$\frac{\varphi(\beta)-\varphi(\rho)}{\beta-\rho} \leqslant \frac{\varphi(\beta)-\varphi(\alpha)}{\beta-\alpha}$$

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and we obtain:

$$u \int_{\alpha}^{\beta} (\beta - \rho)\, \lambda_u(d\rho) \leqslant \gamma \frac{\varphi(\beta) - \varphi(\alpha)}{\beta - \alpha} \int_{\alpha}^{\beta} (\beta - \rho)\, \lambda_u(d\rho)$$

recalling the definition of $v_c = \gamma \frac{\varphi(\beta) - \varphi(\alpha)}{\beta - \alpha}$ we conclude the claim.

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## REFERENCES

1. E. D. Andjel and M. E. Vares, Hydrodynamic equations for attractive particle systems on $\mathbb{Z}$, *J. Stat. Phys.* **47**:215–236 (1987).