

CORRIGENDUM to

“A Liouville-type theorem for the 3-dimensional parabolic Gross-Pitaevskii and related systems”
by Quoc Hung Phan and Philippe Souplet, Math. Ann. (2016) 366:1561-1585.

In the first paragraph of the proof of Theorem 2.1, it is implicitly assumed that $r \geq 1$. Indeed, this is used in the inequality $\partial_t u_i - \Delta u_i \leq C u_i$ at L1 of P1576.

However, the proof of Theorem 2.1 is valid in the general case $r > 0$. Indeed, Lemma 4.2 is actually true for any **nonnegative** solution (and not just for positive solutions). Therefore, the argument in the second paragraph of the proof of Theorem 2.1 is sufficient to conclude.

The fact that Lemma 4.2 is true for any nonnegative solution $U = (u_i)$ of (1) in $B_1 \times (-1, 1)$ can be checked by an approximation argument. Namely, for any fixed $\theta \in (0, 1)$, setting $u_{i,\theta} = u_i + \theta$, we see that $U_\theta = (u_{i,\theta})$ is a positive solution to the perturbed system

$$\partial_t u_{i,\theta} - \Delta u_{i,\theta} = \sum_{j=1}^m \beta_{ij} u_{i,\theta}^r u_{j,\theta}^{r+1} + f_{i,\theta}, \quad i = 1, \dots, m,$$

where

$$f_{i,\theta} = \sum_{j=1}^m \beta_{ij} [u_i^r u_j^{r+1} - u_{i,\theta}^r u_{j,\theta}^{r+1}]$$

and that $f_{i,\theta}$ converges to zero in $C_{loc}(B_1 \times (-1, 1))$ as $\theta \rightarrow 0^+$.

Applying the arguments of the proof of Lemma 4.1 to U_θ instead of U , we obtain formula (15) for U_θ with, on the RHS, an additional contribution A_θ coming from the term $f_{i,\theta}$, and A_θ is bounded by half the LHS of (15) plus a term which goes to 0 as $\theta \rightarrow 0$. The proof of Lemma 4.2 is then unchanged and estimate (26) for U follows by letting $\theta \rightarrow 0$.