Erratum

Statistical Mechanics of Systems of Unbounded Spins

Joel L. Lebowitz

Department of Mathematics, Rutgers University, New Brunswick, NJ 08903, USA

Errico Presutti

Istituto Mathematico, Università di Roma, I-00100 Roma, Italy

The proofs of Sect. 4 require an additional hypothesis:

Hypothesis 4.1. There exists $a > 0$ such that for any bounded $\Delta, \Lambda \subset Z^\nu$, $\Delta \cap \Lambda = \emptyset$ and any $S_{\Delta \cup \Lambda}$

$$U(S_\Lambda) + W(S_\Lambda | S_\Delta) + \sum_{x \in \Delta} a S_x^2 \geqq \sum_{x \in \Delta \cup \Lambda} [A S_x^2 - c].$$

Hypothesis 4.1 is needed in the Appendix to Sect. 4, when Eq. (A4.4) is stated. Namely, when the difference with the case of [5] is considered the lacking factor can be estimated as $\exp\left(-\sum_{x \in [q] \setminus \Lambda} a S_x^2\right)$, where Hypothesis 4.1 is used with $\Delta = ([q] \setminus \Lambda$. The A appearing in Eq. (A4.4) should then be changed into a and, so consistently in the sequel. It is easy to check that if the assumptions of Sect. 1 are satisfied then each of the following conditions is sufficient for Hypothesis 4.1 to hold

    (i) $\exists$ a and b such that

$$U(S_x) \leqq a S_x^2 + b.$$

    (ii) $\exists b'$ such that

$$U(S_x) > J S_x^2 - b', \qquad J = \tfrac{1}{2} \sum_{x \in Z^\nu} \Psi(|\times|)$$

[Ψ is defined in Eq. (1.3)].

    (iii) $\exists b''$ and $\Psi' : N \to \mathbb{R}^+$ such that for any bounded Δ, Λ with $\Delta \cap \Lambda = \phi$:

$$W(S_\Lambda | S_\Delta) \geqq -b'' \sum_{x \in \Lambda} \sum_{y \in \Delta} |S_x| |S_y| \Psi'(|x - y|)$$

where Ψ' is decreasing and satisfies Eq. (1.4).

    Condition (iii) is fulfilled by the interaction considered in Sect. 5. We finally remark that there are counter examples to Theorem 4.1 stated with only the assumptions of Sect. 1.

    We are deeply indebted to Prof. C. Preston for communicating to us that the proof of Theorem 4.1 required some stronger conditions.