Correction

Correction to: A New Proof of the Sharpness of the Phase Transition for Bernoulli Percolation and the Ising Model

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Published online: 23 March 2018 – © Springer-Verlag GmbH Germany, part of Springer Nature 2018

Correction to: Commun. Math. Phys. 343, 725–745 (2016)
<https://doi.org/10.1007/s00220-015-2480-z>

The differential inequality (2.5) should be replaced by

$$\frac{d}{d\beta} \langle \sigma_0 \rangle_{\lambda, \beta, h}^2 \geq \frac{2c(\Lambda)}{\beta} \inf_{S \ni 0} \varphi_\beta(S) (1 - \langle \sigma_0 \rangle_{\lambda, \beta, h}^2) - \epsilon(\Lambda, \beta, h)$$

where $\epsilon(\Lambda, \beta, h) := 2 \sum_{x \in \Lambda} \sum_{y \in V \setminus \Lambda} J_{x,y} (\langle \sigma_0 \sigma_x \rangle_{\lambda, \beta, h} - \langle \sigma_0 \rangle_{\lambda, \beta, h} \langle \sigma_x \rangle_{\lambda, \beta, h})$.

The correcting term $\epsilon(\Lambda, \beta, h)$ comes from the fact that the summation on $y \notin S$ in the displayed equations before (2.14) should be understood as a summation on $y \in \Lambda \setminus S$. Thus, in (2.14), the term $\frac{1}{\beta} \varphi_\beta(S)$ should be replaced by $\frac{1}{\beta} \varphi_\beta(S) - \sum_{x \in \Lambda} \sum_{y \in V \setminus \Lambda} J_{x,y} \langle \sigma_0 \sigma_x \rangle_{S, \beta, 0}$. One then sums on every possible value of S and uses the switching lemma to obtain $\epsilon(\Lambda, \beta, h)$.

The appearance of this correcting term does not modify the proof since the GHS inequality [GHS70] classically implies that $\epsilon(\Lambda, \beta, h)$ tends to 0 as Λ tends to V .

Independently, another place of the paper can benefit from a slight modification: the definition of $\chi_n(\beta)$ on the bottom of Page 743 should be replaced by

$$\chi_n(\beta) := \sup \left\{ \sum_{x \in \Lambda} \langle \sigma_0 \sigma_x \rangle_\beta^+ : \Lambda \subset V \text{ with } |\Lambda| \leq n \right\}.$$

Acknowledgements. We thank Alexander Glazman and Marcin Lis for pointing out the mistake to us.

The original article can be found online at <https://doi.org/10.1007/s00220-015-2480-z>.

Reference

- [GHS70] Griffiths, R.B., Hurst, C.A., Sherman, S.: Concavity of magnetization of an ising ferromagnet in a positive external field. *J. Math. Phys.* **11**, 790–795 (1970)

Communicated by F. Toninelli