Erratum II: Lecture Notes in Applied Differential Equations of Mathematical Physics - Some misprints corrections

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2) **"Lecture Notes in Applied Differential Equations of Mathematical Physics", Luiz C.L. Botelho., World Scientific, 2008.**

Pag. 4 - Eq.(1.15), read:

$$\left\{4\pi\int_0^{\varepsilon} dv\cdot v^2\cdot\frac{1}{v^2}\right\}^{1/2}.$$

Pag. 7 - Eq.(1.26), read:

$$\lim_{N\to\infty}\left\{\frac{\Gamma(\frac{2}{2})}{2(\sqrt{\pi})^2}\cdot\frac{1}{N-2}e^{(2-N)lg(\vec{r}-r')}-\frac{1}{N-2}\right\}.$$

Pag. 23 - Eq.(1.93), read:

$$||(TV)(\vec{r})||_{L^2}\leq(4\pi\, diam(\Omega))^{1/2}||U||_{L^2}.$$

$$|\mu_r|\leq(4\pi\, diam(\Omega))^{1/2}.$$

Pag. 60 - below Eq.(3.5), read: "...given by the vector (φ,π) such that $(A\varphi,A\varphi)^{(0)}<\infty$ and $(A\pi,\pi)^{(0)}<\infty$.".

Pag. 73 - Eq.(3.79), read:

$$\frac{\partial^2 U}{\partial^2 t}=-AU+B_1\frac{\partial U}{\partial t}+B_2U+F(U,t).$$

Pag. 74 - Eq.(3.84), read:

$$2V_2 = +B_1 \pm (B_1^2 - 4B_2)^{1/2}.$$

Pag. 111 - Eq.(5.29), read:

$$\overbrace{\left[\bigcup_{N=1}^{\infty} L^2(R^N, d\mu(h_1, \dots, h_N))\right]}^{\text{Topological closure}} = L^1(L^2(R^2), d\mu(h)).$$

Pag. 125 - Eq.(5.53), read:

$$\exp\left\{-g_{bare}(\alpha)\int d^2xV(\varphi(x))\right\} = \lim_{N\to\infty}\{...\}.$$

Pag. 126 - Eq.(5.56), read:

$$G_\alpha(x_i, x_j) = +\frac{1}{2\pi}|x_i - x_j|^{2(\alpha-1)} \times \frac{\Gamma(1-\alpha)}{\Gamma(\alpha)}[2^{1-2\alpha}(1 + (-1)^{2(\alpha-1)})] \quad \text{for } \alpha < 1.$$

Line below eq.(5.74), read: ... in the case $n = 1$, $k < \frac{1}{2}$, and $\nu = 1$.

Pag. 134 - Eq.(5.94) and Eq.(5.95), change

$$\int_{\mathcal{H}} d_A(\varphi) \to \int_{\mathcal{H}^{alg}} d_A\mu(\varphi)$$

Pag. 139 - Eq.(5.118), read:

$$\frac{\Gamma(\frac{n-2}{2})}{2^2\pi^{n/2}|x-y|^{n-2}}.$$

Pag. 151 - Eq.(C-5), read:

$$\frac{d}{d\sigma}[\log det_f(A(\sigma))^2] = ...$$

Pag. 163 - Eq.(D-18), read:

$$Tr(e^{-tA}) \overset{t\to 0^+}{=} \sum_{j=0}^{\infty}(\frac{1}{2\pi})^2\left\{\int_{R^2} d^2\xi d^2x\sigma(e^{-tA})(x,\xi)\right\} = ...$$

Pag. 179 - Eqs.(6.49), (6.50):

The correct assertive is the following (below Eq.(6.48))

"..., the translational-invariance of the measure is full insured only if h is such that $\langle Ah, h\rangle < \infty$...".

Pag. 180, Correctly, one shoul read:

$$\mu(\chi_{Dom(A)}(\varphi)) = \lim_{\alpha\to 0}\left\{\lim_{N\to\infty}\int_{\mathcal{H}} d_{A^{-1}}\mu(\varphi)e^{-\alpha\langle AP_N\varphi, AP_N\varphi\rangle}\right.$$
$$= \lim_{\alpha\to 0}\lim_{N\to\infty}\left(\prod_{n=1}^{N}(1+\alpha\lambda_n)^{-\frac{1}{2}}\right) = \lim_{\alpha\to 0^+}$$
$$\times \det(1+\alpha A) = 1.$$

In the case of $\mathcal{H} = (L^2(R^N), d^N x)$, one can show that the functional measure of the smooth field configurations defined as "$\lim_{s\to\infty}\mathcal{H}^S(R^N)$", has zero measure of the charachteristic functional $Z(j)$ has a bound of the form below in each cylinder $P_N\colon \mathcal{H}\to R^N$;

$$|Z(P_N j)| \le Q^{(N)}(j_1,\dots,j_N)\exp\left(-\sum_{s,p=1}^{N} j_s k_{sp} j_p\right)$$

with Q denoting a polinomial of N-variables, namely

$$\lim_{s\to\infty}\mu(\mathcal{H}^s(R^N) = 0$$

Pag. 184, below Eq.(6.70), read: correct to "... to our class of cut-off datum

$$f(x)\chi_{W\{Q,\{\delta_k\}\}}$$

with

$$W\{Q,\{\delta_k\}\} = \{x\in\mathcal{H} \mid (\langle x, e_k\rangle)^2 = x_k^2 \ge \delta_k + 2\lambda_k \text{ with } \Sigma\delta_k = \overline{\delta} < \infty\}.$$

Pag. 185 - Eq.(6.72), read:

$$\int_4 d_Q\mu(x)\cdot g^2(x)\chi_{W\{Q,\{\delta_k\}\}}(x)$$
$$\le \frac{4Tr(Q^2)}{\delta}\int_4 d_Q\mu(x)\langle Dg, Dg\rangle(x).$$

Pag. 215 - above Eq.(7.22), read:

$$(\text{ with } G'(x) = F(x); F(0) = 0 = G'(0)).$$

Pag. 219 - Eq.(7.35), read:

$$\overset{-\frac{1}{2}}{\det}[1 + A\lambda M(Q^{(\varepsilon)})] = ...$$
$$= \exp\left\{-\frac{A}{2} Tr_{L^2(\Omega)} \int_0^\lambda d\lambda' R(\lambda')\right\}.$$

and

$$Q_{ij}^{(\varepsilon)}(\sigma, \sigma') = \frac{1}{\pi\varepsilon}\left[\exp\left(-\left(\frac{(\sigma-\sigma')^2}{\varepsilon^2}\right)\right)\right] \cdot \delta_{ij} \quad \text{Eq.(7.33).}$$

Pag. 267 - Eq.(A-7), read:

$$\frac{1}{\pi}||S_n(f)(x) - f(x)||_{L^1} \leq \sqrt{2\pi}[(M_A + M_B)n^{-\varepsilon}]^{1/2}.$$

Pag. 274 - Eq.(B-6), read:

$$\sup_{z\in H^+}\left\{\int_\Delta |fe^{-f}|^z(m)d\mu(m)\right\} \leq \mu(X) < \infty.$$

Pag. 285 - Eq.(D-6), read:

$$\lim_{z\to z_k}\left[(\frac{d}{dz})^p\{\frac{h'(z)}{h(z)}\} + \frac{p!}{(z_k - z)^{p+1}}\right]$$
$$= -p!\left(\sum_{\substack{n\neq k\\ n-1}}^{\infty} \frac{1}{(\overline{z}_\mu - \overline{z}_k)^{p+1}}\right).$$

Pag. 292 - Eq.(10.23a), read:

$$\int_{R^2} dx \int_0^\infty d\xi \left(\frac{\partial v^i}{d\xi}\Delta_x v_i\right)(x, \xi).$$