Correction of

"Hölder Continuity of Harmonic Functions with Respect to Operators of Variable Order"

by Richard F. Bass and Moritz Kassmann, Comm. PDE, 30:1249-1259, 2005

The proof of Theorem 2.2 contains an error. On Page 1257, in the first display

$$I_3 \le \sum_{i=1}^{n-2} s_{n-i-1}(F_i - F_{i-1}) = \dots$$

needs to be replaced by

$$\begin{aligned} I_3 \le \sum_{i=1}^{n-2} s_{n-i-1}(F_i - F_{i+1}) &= s_{n-1}F_1 - s_1 F_{n-1} + \sum_{i=1}^{n-2}(s_{n-i-1} - s_{n-i})F_i \\ &\le s_{n-1}F_1 + \sum_{i=1}^{n-2}(s_{n-i-1} - s_{n-i})F_i \end{aligned}$$

We set $r_n = \theta_2 b^{-n}$ for $b \ge 4$ chosen below (instead of $r_n = \theta_2 4^{-n}$).

The term $\sum\limits_{i=1}^{n-2}(s_{n-i-1} - s_{n-i})F_i$ can be estimated as in the printed version. Moreover

$$\begin{aligned} s_{n-1}F_1 = \theta_1 a^{-n+1} F_1 \le \theta_1 a^{-n+1}\kappa_1 \left(\frac{2\theta_2 b^{-n}}{\theta_2 b^{-n+1} - \theta_2 b^{-n}}\right)^\sigma &\le \theta_1 a^{-n+1}\kappa_1 \left(\frac{2}{b-1}\right)^\sigma \\ &= s_n a \kappa_1 \left(\frac{2}{b-1}\right)^\sigma \end{aligned}$$

One arrives at

$$u(z) - u(y) \le s_n \left[\frac{1}{2}p_n + a(1-p_n) + a\kappa_1 \left(\tfrac{2}{b-1}\right)^\sigma + c_4(a-1)\right]$$

Now choose $a > 1$ sufficiently close to 1 and $b \ge 4$ sufficiently large to ensure that the expression inside the brackets is less than or equal to $1/a$. The remainder of the proof is the same as in the printed version.

The proof of Corollary 2.3 needs to be modified accordingly. Set $r_n = \theta_2 b^{-n}$ for $b \ge 4$. Then

$$\begin{aligned} &F_j \le c_5(\log b^j)^{-\gamma}, \\ &I_3 \le s_{n-1}F_1 + \sum_{i=1}^{n-2}(s_{n-i-1} - s_{n-i})F_i \le c_5(\log b)^{-\gamma}\theta_1(n-1)^{-\rho} + c_7\theta_1 n^{-(\rho+1)\wedge\gamma} \\ &\quad \le s_{n+1}/2 \end{aligned}$$

for ρ, b, n large enough and θ_1 small enough. The rest of the proof stays unchanged.

Bielefeld/Storrs, November 2010