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

\[ I_3 \leq \sum_{i=1}^{n-2} s_{n-i-1}(F_i - F_{i-1}) = \ldots \]

needs to be replaced by

\[ I_3 \leq \sum_{i=1}^{n-2} s_{n-i-1}(F_i - F_{i+1}) = s_{n-1}F_1 - s_1F_{n-1} + \sum_{i=1}^{n-2} (s_{n-i-1} - s_{n-i})F_i \leq s_{n-1}F_1 + \sum_{i=1}^{n-2} (s_{n-i-1} - s_{n-i})F_i \]

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

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

\[ s_{n-1}F_1 = \theta_1 a^{-n+1}F_1 \leq \theta_1 a^{-n+1}\kappa_1 \left( \frac{2\theta_2 b^{-n}}{\theta_2 b^{-n+1} - \theta_2 b^{-n}} \right)^{\sigma} \leq \theta_1 a^{-n+1}\kappa_1 \left( \frac{2}{b-1} \right)^{\sigma} = s_n a\kappa_1 \left( \frac{2}{b-1} \right)^{\sigma} \]

One arrives at

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

Now choose \( a > 1 \) sufficiently close to 1 and \( b \geq 4 \) 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 \( b \geq 4 \). Then

\[ F_j \leq c_5 (\log b^j)^{-\gamma}, \]

\[ I_3 \leq s_{n-1}F_1 + \sum_{i=1}^{n-2} (s_{n-i-1} - s_{n-i})F_i \leq c_5 (\log b)^{-\gamma}\theta_1(n-1)^{-\rho} + c_7\theta_1 n^{-(\rho+1)\wedge \gamma} \leq s_{n+1}/2 \]

for \( \rho, b, n \) large enough and \( \theta_1 \) small enough. The rest of the proof stays unchanged.

Bielefeld/Storrs, November 2010