1117-42-362 **Leonid Slavin*** (`leonid.slavin@uc.edu`) and **Pavel Zatitskiy**. *Dimension-free estimates for harmonic BMO.* Preliminary report.

We consider BMO($\mathbb{R}^n$) equipped with the Garsia norm,

$$\|\varphi\|_G = \sup_{z\in\mathbb{R}^{n+1}_+} \left(\varphi^2(z) - \varphi(z)^2\right)^{1/2},$$

where $g(z)$ denotes the harmonic extension of a function g on $\mathbb{R}^n$ into the upper half-space. We show how one can obtain estimates for expressions of the form

$$f(\varphi)(z)$$

in terms of $\varphi(z)$, $\varphi^2(z)$ and $\|\varphi\|_G$. Here f is a fixed function on $\mathbb{R}$, a priori assumed locally bounded and uniformly bounded from below. For example, $f(t) = e^t$ gives the harmonic analog of the integral John–Nirenberg inequality.

It turns out that if f is such that the corresponding inequality holds for BMO$\big((0,1)\big)$ equipped with the classical (L^2-based) BMO norm, then we automatically have the same bound for the functional above; in particular, all such bounds are dimension-free. The proof uses Bellman functions for the classical formulation as locally concave majorants for those in the harmonic formulation. Analogous results hold for related function classes, such as A_p. (Received January 18, 2016)