1116-42-1681 **Leonid Slavin*** (leonid.slavin@uc.edu) and **Vasily Vasyunin**. *The John–Nirenberg constant of* BMO^p.

For $p > 0$, BMO^p is the space of all functions φ for which the quantity $\|\varphi\|_{\mathrm{BMO^p}} := \sup_{\text{interval } Q} \left(\frac{1}{|Q|}\int_Q |\varphi - \frac{1}{|Q|}\int_Q \varphi|^p\right)^{1/p}$ is finite. The John–Nirenberg constant of BMO^p, $\varepsilon_0(p)$, is the supremum of all $c_0 > 0$ for which there exists a $C_1 > 0$ such that for any interval Q and any $\lambda \geq 0$,

$$\frac{1}{|Q|}|\{t \in Q : |\varphi(t) - \tfrac{1}{|Q|}\textstyle\int_Q \varphi| \geq \lambda\}| \leq C_1 e^{-c_0\lambda/\|\varphi\|_{\mathrm{BMO^p}}}.$$

This constant has proved difficult to compute: until recently, the only known cases were $p = 1$ and $p = 2$. We deal with this difficulty by considering the dual problem of estimating (from below) the BMO^p norms of logarithms of A_∞ weights. As a result, we obtain $\varepsilon_0(p)$ for all $p \geq 1$ and also show that for $1 \leq p \leq 2$ it is attained as c_0 above.

The proof relies on the computation of the appropriate Bellman functions, which in this setting are optimal convex solutions of the homogeneous Monge–Ampère equation on a non-convex plane domain. The geometry of these solutions is substantially different for different ranges of p. Part of the work is joint with Vasily Vasyunin. (Received September 21, 2015)