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We study weights $0 < W < \infty$ in the disk for which the averaging operators

$$A_r^W(\phi)(z) = \frac{1}{W(D(z, 2r))} \int_{D(z, r)} \phi(w)W(w)dA(w),$$

are bounded in $L^p(W)$, where $D(z, r)$ is the hyperbolic neighborhood of z of radius r . These weights are related to the weights characterized by Bekolle for which the Bergman-type projections

$$P_\alpha f(z) = \int_{\mathbb{D}} \frac{f(w)}{(1 - z\bar{w})^{\alpha+2}} (1 - |w|)^\alpha dx dy.$$

are bounded. We use these concepts to show that atomic decompositions are possible in weighted Bergman spaces for a large class of weights. (Received January 27, 2014)