**FENG DAI**, University of Alberta
*weighted quadrature in Besov spaces with $A_\infty$ weights on multivariate domains*

Let $\Omega$ denote either the unit sphere $S^{d-1} := \{x \in \mathbb{R}^d : \ \|x\| = 1\}$, or the unit ball $B^d := \{x \in \mathbb{R}^d : \ \|x\| \leq 1\}$, or the standard simplex $T^d := \{x \in \mathbb{R}^d : \ \ x_1, \cdots, x_d \geq 0, \sum_{j=1}^d x_j \leq 1\}$, and let $w$ be an $A_\infty$ weight on $\Omega$. For the unit ball $MB_\tau^\alpha(L_{p,w})$ of the weighted Besov space $B_\tau^\alpha(L_{p,w})$ on $\Omega$, we find the sharp asymptotic order of the following quantity as $n \to \infty$:

$$\inf_{\substack{\lambda_1,\cdots,\lambda_n \in \mathbb{R} \\ \xi_1,\cdots,\xi_n \in \Omega}} \sup_{f \in MB_\tau^\alpha(L_{p,w})} \Big| \int_\Omega f(x) w(x)\, dx - \sum_{j=1}^n \lambda_j f(\xi_j) \Big|.$$

We also establish a similar result on unweighted spherical caps.