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Dyadic structure theorems for strong function spaces

The space $BMO(\mathbb{R}^n)$ can be shown to coincide with the intersection of N dyadic-type BMO spaces, where $N > 1$. Moreover, it is known that the sharp (i.e. smallest possible) value for N is $n + 1$. In joint work with José Conde-Alonso, we consider the case of strong $BMO(\mathbb{R}^n)$, where mean oscillation is bounded over all rectangles with sides parallel to the axes. We exploit the product structure inherent to rectangles and inherited by strong $BMO(\mathbb{R}^n)$ to show that an analogous result holds for this function space with $N = 2$ regardless of the dimension. Other function spaces such as BLO and VMO are also considered.