

**Atomic decompositions, two stars theorems, and distances for the  
Bourgain–Brezis–Mironescu space and other big spaces**

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Given a Banach space  $E$  with a supremum-type norm induced by a collection of operators, we prove that  $E$  is a dual space and provide an atomic decomposition of its predual. We apply this result, and some results obtained previously by one of the authors, to the function space  $\mathcal{B}$  introduced recently by Bourgain, Brezis, and Mironescu. This yields an atomic decomposition of the predual  $\mathcal{B}_*$ , the biduality result that  $\mathcal{B}_0^* = \mathcal{B}_*$  and a formula for the distance from an element  $f \in \mathcal{B}$  to  $\mathcal{B}_0$ . This is a joint project with L. Greco, K.M. Perfect, C. Sbordone and R. Schiattarella.