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Preduals of Q_p spaces and Carleson imbeddings for weighted Dirichlet spaces

We prove a weak factorization result for the predual of the space Q_p on the unit disc, that is, we show that functions in this space can be written as sums of products of functions in given weighted Dirichlet and Bergman spaces with the usual control on the norms. With this representation we investigate the relation between Q_p and Carleson inequalities for functions in weighted Dirichlet spaces and, in particular, we prove a characterization of bounded Q_p -functions in terms of pointwise multipliers between such spaces. Our approach is based on imbeddings in vector-valued sequence spaces and yields also atomic decompositions of the predual of Q_p .