On projections arising from isometries with finite spectrum on Banach spaces

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If P is an orthogonal projection on a Hilbert space, then it can be written in the form $P = \frac{I+T}{2}$ for an isometry (a unitary operator) T satisfying $T^2 = I$. When looking for a suitable generalization of orthogonal projections in the Banach space setting, the main task is to get rid of the involution in defining an orthogonal projection. One way is to consider Banach space projections that can be written as the average of the identity with an isometric reflection. If T is an isometric reflection then $\sigma(T) = \{1, -1\}$, and for $P = \frac{I+T}{2}$ we have $T = P - (I - P)$. More generally, if T is an isometry such that $\sigma(T) = \{1, \lambda\}$ with $\lambda \neq 1$, then there exists a projection P such that $T = P + \lambda(I - P)$; in this case P is called a generalized bicircular projection. One can also consider generalized n-circular projections that arise from isometries with n distinct eigenvalues. In this talk we shall describe the structure of generalized n-circular projections on some important complex Banach spaces, mostly in the case $n = 2$, but also a few for $n \geq 3$.