GENERALIZED BI-CIRCULAR PROJECTIONS
ON SPACES OF OPERATORS AND JB^* TRIPLES

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ABSTRACT. We give a characterization of generalized bi-circular projections on spaces of operators $\mathcal{B}(X, Y)$ which support only elementary surjective isometries. We also give a characterization of generalized bi-circular projections for JB^* triples.

1. Introduction. Fosner, Illisevic, and Li in [**7**] have introduced an interesting class of projections on Banach spaces. We refer to these projections as generalized bi-circular projections. The results of Fosner, Illisevic, and Li generalizes earlier results by Stacho and Zalar on bi-circular projections, see [**16, 17**]. Stacho and Zalar call a projection P on a Banach space X a bi-circular projection if $e^{ia}P + e^{ib}(I - P)$ is an isometry for all choices of real numbers a and b. It is easy to show that these projections are norm Hermitian, see [**11**]. Fosner, Illisevic, and Li in [**7**] only require that $P + \lambda(I - P)$ be an isometry for some $\lambda \in \mathbf{T} \setminus \{1\}$. In [**7**], the authors obtained nice results in the finite-dimensional setting and raise the problem of classifying these projections in other Banach spaces. In this paper, we study such projections for spaces $\mathcal{B}(X, Y)$ of bounded operators between pairs of Banach spaces. We also make some observations about generalized bi-circular projections in JB^* triple systems. These results follow from a result of Guerrero and Palacios in [**9**], as well as some results of Friedman and Russo in [**8**].

2. Generalized bi-circular projections on $\mathcal{B}(X, Y)$. In this section, we give a characterization of generalized bi-circular projections on spaces of operators $\mathcal{B}(X, Y)$ supporting only isometries of a special type. Operators of the form $\mathcal{J}(T) = UTV$ on $\mathcal{B}(X, Y)$ with U and V surjective isometries on Y and X, are clearly surjective isometries on