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University of Waterloo, Waterloo, Ontario N2L 3G1. *Graph covers and equiangular frames.*

We present a graph-theoretic approach to equiangular frames. Let  $X$  be a graph. If we replace each vertex  $u$  of  $X$  by a set of  $r$  vertices, called the fiber of  $u$ , and replace each edge  $(u, v)$  of  $X$  by an  $r$ -matching between the fiber of  $u$  and the fiber of  $v$ , then we obtain an  $r$ -fold cover of  $X$ . Covers of complete graphs are of particular interest as they give rise to equiangular tight frames, under some regularity conditions. We will explore these conditions, and show how to construct equiangular tight frames from graph covers, and vice versa. (Received January 21, 2018)