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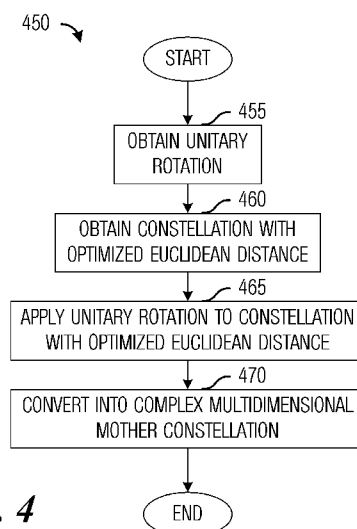
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(54) Title: SYSTEM AND METHOD FOR DESIGNING AND USING MULTIDIMENSIONAL CONSTELLATIONS

**Fig. 4**

(57) Abstract: A method for generating a codebook includes applying a unitary rotation to a baseline multidimensional constellation to produce a multidimensional mother constellation, wherein the unitary rotation is selected to optimize a distance function of the multidimensional mother constellation, and applying a set of operations to the multidimensional mother constellation to produce a set of constellation points. The method also includes storing the set of constellation points as the codebook of the plurality of codebooks.

