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A COMBINATORIAL CONSTRUCTION OF BI-CYCLIC 4-POLYTOPES

Let $B(p,q,n)$ denote the convex hull of n evenly spaced points on the generalized trigonometric moment curve $(\cos(pt), \sin(pt), \cos(qt), \sin(qt))$, ranging between 0 and 2π , and p and q relatively prime positive integers. If $n=pq$ and $p=q-3$ then there are purely geometrical conditions that yield the face lattice of $B(p,q,n)$.