2-Disjoint Geodesic Bipancyclicity of Hypercubes

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ABSTRACT

Let G = (V, E) be a graph. For any two vertices u, v ? V(G), a cycle C is called (u,v)-geodesic if there exists a u-v shortest path of G lying on C. A bipartite graph G is called geodesic bipancyclic if for any two vertices u, v ? V, there exists a (u,v)-geodesic cycle of every even length ranging from max{2d(u, v), 4} to |V|. In this thesis, we first show that the hypercube Qn for n ?d 4 is geodesic bipancyclic when it has two adjacent fault vertices. Then we prove that Qn is 2-disjoint geodesic bipancyclicity for n ?d 4. That is, given any four vertices u, v, x, y without forming ?戟, x, v?? ?戟, y, v?? ?掌, u, y?? ?掌, v, y? paths, and given any even integers l1, l2 such that l1 + l2 ?T 2n, l1 ?d min{2d(u, v) + 2, 2n}, and l2 ?d min{2d(x, y) + 2, 2n}, there exist two disjoint cycles C1 and C2 in Qn such that C1 is a (u, v)-geodesic cycle of length l1, and C2 is a (x, y)-geodesic cycle of length l2.

Keywords : Geodesic Bipancyclic、2 – Disjoint Geodesic Bipancyclicity、Hypercube

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