

On the connectivity of the k -clique polyhedra

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Abstract

We study the neighbourlicity of the polyhedron P_{kn}^2 of the k -cliques of the complete graph K_n with n vertices. We prove that this polyhedron is 3-neighbourly. Following a remark of Pierre Duchet we generalize partially this result to the k -clique polyhedra of r -uniform complete hypergraphs, P_{kn}^r . We study a linear programming model which give the neighbourlicity of a given P_{kn}^r . We are then able to give an upper bound of neighbourlicity of any P_{kn}^r . The proof of this result uses an interpretation of a minimum set of cliques non defining a face of P_{kn}^r in term of a particular maximum stable set of the edge graph of the unit hypercube in $(r + 1)$ dimensions.