On a Convex Geometric Connection
to Threshold Logic

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A geometric connection from convex polytopes to Threshold Logic will be reviewed. We have presented necessary and sufficient conditions to recognize cut-complexes with 2 or 3 maximal faces from the class of all cubical complexes. This recognition of cut-complexes is closely related to an old proposal on cubical lattices by N. Metropolis and G. C. Rota. They proposed cubical lattices may also be used for synthesis of Boolean functions parallel to the conventional Boolean algebraic methods. The characterization will be applied to recognize some cut-complexes in lower dimensional cubes.

Keywords: Threshold logic, convex polytopes, cubical lattices.