1080-05-290 **Jozsef Balogh** (jobal@math.uiuc.edu), **Ping Hu** (pinghu1@math.uiuc.edu) and **Bernard Lidicky*** (lidicky@illinois.edu), Department of Mathematical Sciences, 1409 W. Green St., Urbana, IL 61801, and **Hong Liu** (hliu36@illinois.edu). *Upper bounds on the size of 4- and 6-cycle-free subgraphs of the hypercube.*

In this paper we modify slightly Razborov's flag algebra machinery to be suitable for the hypercube. We use this modified method to show that the maximum number of edges of a 4-cycle-free subgraph of the n-dimensional hypercube is at most 0.6068 times the number of its edges. We also improve the upper bound on the number of edges for 6-cycle-free subgraphs of the n-dimensional hypercube from $\sqrt{2}-1$ to 0.3755 times the number of its edges. (Received January 30, 2012)