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**Elina Kalnina\*** (ekalnina@inbox.lv), Mednieku 10 -7, LV-5001 Ogre, Latvia. *Combinatorial block designs for Quantum Computing problems*. Preliminary report.

Problems for this paper come from quantum computing. We try to construct a Boolean function with 15 arguments and the degree 5 of the representing polynomial. The construction is based on the known solution of the Kirkman schoolgirl problem. A new technique is used to define values of the Boolean function on several combinatorial block designs. I divide the arguments of the Boolean function into special groups. These groups allow us to distinguish between several types of blocks and find out how many blocks of each type should be contained in the block design. (Received September 19, 2005)