# Cryptology ePrint Archive: Report 2011/515

**A general conjecture similar to T-D conjecture and its applications in constructing Boolean functions with optimal algebraic immunity**

*Qingfang Jin and Zhuojun Liu and Baofeng Wu and Xiaoming Zhang*

**Abstract:** In this paper, we propose two classes of 2k-variable Boolean functions, which have optimal algebraic immunity under the assumption that a general combinatorial conjecture is correct. These functions also have high algebraic degree and high nonlinearity. One class contain more bent functions, and the other class are balanced.

**Category / Keywords:** Boolean function, Algebraic immunity, Bent function, Balancedness, Nonlinearity, Algebraic degree

**Date:** received 18 Sep 2011

**Contact author:** qfjin at amss ac cn