A NOTE ON TALAGRAND’S CONVEX HULL
CONCENTRATION INEQUALITY

DAVID POLLARD

ABSTRACT. The paper reexamines an argument by Talagrand that leads to a remarkable exponential tail bound for the concentration of probability near a set. The main novelty is the replacement of a mysterious calculus inequality by an application of Jensen’s inequality.

1. INTRODUCTION

Let $\mathcal{X}$ be a set equipped with a sigma-field $\mathcal{A}$. For each vector $w = (w_1, \ldots, w_n)$ in $\mathbb{R}_+^n$, the weighted Hamming distance between two vectors $x = (x_1, \ldots, x_n)$ and $y = (y_1, \ldots, y_n)$, in $\mathcal{X}^n$ is defined as

Talagrand (1995, Section 4.1) proved a remarkable concentration inequality for such as those based on the tensorization, as in Ledoux (1996), Boucheron, Lugosi, and Massart (2000), Massart (2003), and Lugosi (2003).

REFERENCES


Date: 13 January 2007.


Key words and phrases. Concentration of measure; convex hull; convexity.

**Statistics Department, Yale University, Box 208290 Yale Station, New Haven, CT 06520-8290.**

*E-mail address:* david.pollard@yale.edu  
*URL: http://www.stat.yale.edu/~pollard/*