

On an Intriguing Inequality

Abstract

In this talk, we will address a conjecture made by C. Benítez, Y. Sarantopoulos, and A. Tonge regarding the value of the n -th linear polarization constant of \mathbb{R}^n . We will review some known results and prove their validity for $n \leq 14$. More precisely, we will show that given a set of n unit vectors $\{v_i\}_{i=1}^n \subset \mathbb{R}^n$, the inequality

$$\sup_{\|x\|_2=1} |\langle x, v_1 \rangle \cdots \langle x, v_n \rangle| \geq n^{-n/2}$$

is satisfied for $n \leq 14$, and equality is only achieved if $\{v_i\}_{i=1}^n$ is an orthonormal system.