1041-52-100 **Oleg R. Musin*** (omusin@gmail.com), Dept. of Mathematics, University of Texas at Brownsville, 80 Fort Brown, Brownsville, TX 78520. *Spherical two-distance sets.*

A set S of unit vectors in n-dimensional Euclidean space is called spherical two-distance set, if there are two numbers a and b, and inner products of distinct vectors of S are either a or b. It is known that the largest cardinality $g(n)$ of spherical two-distance sets does not exceed $n(n+3)/2$. This upper bound is known to be tight for $n = 2, 6, 22$. The set of mid-points of the edges of a regular simplex gives the lower bound $L(n) = n(n+1)/2$ for $g(n)$.

In this talk using the so-called polynomial method it will be proved that for nonnegative $a+b$ the largest cardinality of S is not greater than $L(n)$. For the case $a+b<0$ it's proposed upper bounds on —S— which are based on Delsarte's method. Using this it could be shown that $g(n) = L(n)$ for $6 < n < 22$, $23 < n < 40$, and $g(23) = 276$ or 277. (Received August 05, 2008)