

# Characterizing stationary logarithmic points

**Peter Dragnev** (Indiana University – Purdue University Fort Wayne)

## Abstract

The product of all  $N(N-1)/2$  possible distances for a collection of  $N$  points on the circle is maximized when the points are (up to rotation) the  $N$ -th roots of unity. There is an elegant elementary proof of this fact. In higher dimensions the problem becomes much more complicated. For example, if the points are restricted to the unit sphere in 3-space, the result is known for  $N = 1 - 6$ , and 12. We will derive a characterization theorem for the stationary points in  $d$ -space and illustrate it with a couple of examples of optimal configurations that are new in the literature.