1146-52-255 **András Bezdek**, **Ferenc Fodor**, **Viktor Vígh*** (vigvik@math.u-szeged.hu) and **Tamás Zarnócz**. *Arrangements of zones on the sphere.*

A zone of width ω on the unit sphere S^{d-1} $(d \geq 2)$ is the set of points within spherical distance $\omega/2$ of a given great circle. Recently, Jiang and Polyanskii proved that the total width of any collection of zones covering the unit sphere is at least π, proving a conjecture of Fejes Tóth from 1973.

The multiplicity of an arrangement of zones on the sphere is the largest integer k such that there is a point contained in k members of the arrangement. For $n \geq d$, the multiplicity of any arrangement with n zones is at least $d-1$ and at most n. The optimal covering configurations of the Fejes Tóth Conjecture have multiplicity exactly n, that is, maximal. We are interested in finding the minimal possible multiplicity for given d and n depending on the common width of the zones.

In this talk we present some upper bounds for the minimal multiplicity of general arrangements of congruent zones, and we also investigate the minimal multiplicity of coverings of S^{d-1} with congruent zones. (Received January 24, 2019)