

# **Brownsville Seminar**

**UTRGV**<sup>TM</sup>

School of Mathematical  
& Statistical Sciences

## **Quantitative Sperner-type lemmas**

**Speaker: Oleg Musin**

### **Abstract**

I consider a generalization of Sperner's lemma for triangulations of a  $d$ -dimensional polytope  $P$  whose vertices are colored in at most  $m \leq d + 1$  colors. A coloring on the boundary of  $P$  defines an element in the corresponding homotopy group of the sphere. Depending on this invariant, a lower bound is obtained for the number of fully colored simplexes. In particular, if  $m=d=4$  and this (Hopf) invariant is nonzero, then there are at least 9 fully colored tetrahedra.



**Date: February 2nd, 2024**

**Talk time: 2:00-3:00 pm**

**Coffee and Cookies provided !!!**

**Talk location: BLHSB 1.316**

**Zoom: <https://utrgv.zoom.us/j/85333215080>**

For further information or for special accommodations, please contact Dr. Alexey Glazyrin via email [alexey.glazyrin@utrgv.edu](mailto:alexey.glazyrin@utrgv.edu). More information about the seminar talks is available at the website <https://www.utrgv.edu/math/news-events/seminars/brownsville/index.htm>.