

## SEMINARVORTRAG

Die Arbeitsgruppe Funktionalanalysis lädt zu folgendem Vortrag ein:

**Grigory Ivanov**

IST Austria

### **Steinitz theorem: There and Back Again**

A natural question appearing in different applications is how to decompose a point of the convex hull of several vectors in  $\mathbb{R}^d$  in a convex combination of a few of them. A quantitative version of this question is: The convex hull of several vectors in  $\mathbb{R}^d$  contains the Euclidean unit ball  $B$  centered at the origin. Can we choose a few initial vectors whose convex hull contains the ball  $rB$ ? Steinitz in 1914 showed that the convex hull of at most  $2d$  of initial vectors contains an open neighborhood of the origin. However, Steinitz didn't provide any bound on  $r$ . Surprisingly, there has been no reasonable bound on  $r$ ! The best we had so far was the bound  $r \geq d^{-2d}$  obtained by Bárány, Katchalski, and Pach in 1982. In our talk, we will prove using only elementary observations the first polynomial bound on  $r$ .

Zeit: **Dienstag, 15. November 2022 um 14:15 Uhr**

Ort: **Technikerstraße 13b, EG, Großer Hörsaal**

**Gäste sind herzlich willkommen!**

*Eva Kopecká*