



Universität Konstanz

**Fachbereich
Mathematik und Statistik**
Schwerpunkt
Reelle Geometrie und Algebra

Einladung

Im Oberseminar *Reelle Geometrie und Algebra* hält

Victor Vinnikov

(Ben-Gurion University of the Negev, Beer-Sheva)

am **Freitag, 09.12.2016**, einen Vortrag zum Thema:

Block-diagonalization of matrices over local and graded rings

Der Vortrag findet um **13:30 Uhr** in **F426** statt.

Alle Interessenten sind herzlich eingeladen.

Abstract: Let R be a local ring over a field. Consider rectangular matrices with entries in R , up to left-right equivalence $A \rightarrow UAV$, where U and V are invertible matrices over R . When is such a matrix equivalent to a block-diagonal matrix? The cases of dimension zero (matrices over a field) and one (matrices over a discrete valuation ring) can be easily handled explicitly using the classical canonical forms, but the general case is considerably more complicated. An obvious necessary condition is that the ideal of maximal minors of the matrix A factors. This condition is very far from being sufficient, but when the factors are relatively prime ideals we prove a very simple necessary and sufficient condition for block-diagonalization in terms of the Fitting ideals of A . It turns out also that the global question for matrices over a graded ring can be reduced to the local question. As an application, I will discuss reducibility of determinantal representations of reducible hypersurfaces (including positive determinantal representations appearing in the generalized Lax conjecture), and the relation to matrix factorizations. This talk is based on joint work with D. Kerner.

Sebastian Gruler
Koordinator Oberseminar