



Mathematisches Institut, Sidlerstrasse 5, CH-3012 Bern

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**UNIVERSITÄT
BERN**

Philosophisch-
naturwissenschaftliche Fakultät
Departement Mathematik und Statistik
Mathematisches Institut

Mathematical Colloquia

Monday, 15 October 2018

17:15 h, Lecture Room 119

Prof. Dr. Giorgio Ottaviani, Università degli Studi di Firenze

The distance function from a real algebraic variety

Abstract:

The Euclidean distance function from a conic was computed by means of invariant theory in XIX century.

The distance function from the variety of corank one matrices was computed independently by Beltrami and Jordan a few years later and gave rise to the Singular Value Decomposition. Today this function is the core of engineering applications, like "offset surfaces".

More generally, the distance function from a real algebraic variety is a root of an algebraic function.

Having in mind applications to the spectral theory of tensors, we show a duality property of this function and we describe its lowest and highest coefficients.

We show how this fits in the ED philosophy, where ED stands for "Euclidean Distance".