



Institut für Mathematik
und Wissenschaftliches Rechnen
Karl-Franzens-Universität Graz



INVITATION

to the talk of

Dr. Martin Holler

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Title: A pointwise characterization of the subdifferential of the total variation functional

Time: Wednesday, February 24, 2016, 11:00

Place: SR 11.34
Institute of Mathematics and Scientific Computing
Heinrichstraße 36, 3rd floor, 8010 Graz

Abstract:

The total variation (TV) functional measures the radon norm of the distributional derivative of L^p functions, thereby penalizing oscillations while still allowing for jump discontinuities. It is heavily used in applied mathematics, in particular as regularization term in variational image processing.

Due to non-differentiability, optimality conditions for variational problems involving TV require a characterization of elements of its subdifferential. While an integral-based characterization is rather straightforward, a more amenable, pointwise description of these elements is non-trivial and requires to map $H(\text{div})$ vector fields to L^1 spaces with respect to particular radon measures.

In this talk we will revisit classical results in this direction and present a point-wise characterization of the subdifferential of TV using a trace operator. Furthermore, we will discuss limitations and possible improvements of this approach.

Prof. Karl Kunisch