Oberseminar Analysis und Theoretische Physik

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Radon transformation and Fourier integral operators

We consider a type of operators defined by double fiberations or, more generally, by double submersions.

First we discuss when such operators are in the class of Fourier integral operators (= FIO), since known Radon transformations treated until now are in the class of FIO.

After an introduction of the Lagrangian distribution theory and FIO theory, we state the condition when the Radon transformation defined by a given double submersion is in the class of FIO.

Then, we explain several examples and state known inversion formulas, which are a central topics for this class of operators.

However in the general setting we do not know when the Radon transform is invertible, or rather whether it is a Fredholm operator.

We note that if we understand that the ellipticity of such operators as being same with the case of pseudo-differential operators, that is nowhere vanishing of the principal symbol, it does not necessarily imply the Fredholmness. So it might be interesting to see what kinds of additional geometric structure(s) should be assumed in the double submersion for the Radon transformation being Fredholm. The examples here will be interesting by themselves.

Dienstag, 18.7.2023, 15:00 Uhr, Raum c311
Hauptgebäude der Leibniz Universität

Dazu laden herzlich ein:
Prof. Dr. Wolfram Bauer, Prof. Dr. Joachim Escher, Prof. Dr. Johannes Lankeit, Prof. Dr. Elmar Schrohe, Prof. Dr. Christoph Walker