



Einladung zum Gastvortrag

Generalized Bessel potential spaces via nonlocal gradients

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Abstrakt:

The starting point of this talk is the Riesz fractional gradient, which constitutes a special case of nonlocal gradients based on general radial kernels. It was observed by Shieh and Spector in their influential paper in 2015 that the special (Riesz) nonlocal Sobolev spaces arising in analogy to classical Sobolev spaces from the Riesz fractional gradient coincide with the well-known Bessel potential spaces.

In my talk I will present ongoing work in collaboration with Carolin Kreisbeck and Carlos Mora-Corral (Universidad Autónoma de Madrid) that extends the identity above and other related representations to general nonlocal Sobolev spaces based on the aforementioned general nonlocal gradients. In particular, we deduce for general nonlocal Sobolev spaces (i) a Fourier characterization, (ii) a characterization in terms of the fractional Laplacian, (iii) a characterization as potential spaces. Other interesting identities will be touched upon along the way.

Finally, I will give an outlook why these results are important, which doors to new research directions they push open, and what generalizations of the result one could tackle next.

**Mittwoch, 29. Juli 2026,
14.00 Uhr, Interimsbau INT-008**

Alle Interessierten sind herzlich eingeladen.

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