# Projective description for inductive limits of spaces of differentiable functions

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*Session: 17. Functional Analysis: relations to Complex Analysis and PDE*

Weighted inductive limits of spaces of continuous function

$$\mathcal{V}C(X) = \{f \in C(X) : \exists\, n \in \mathbb{N}\ \sup\{v_n(x)|f(x)|\} < \infty\}$$

for suitable sequences of weight functions appear in connection with several analytical problems and are well investigated since the seminal work [1] of Bierstedt, Meise, and Summers from 1982. In particular, under realistic assumptions there is a concrete description of all continuous semi-norms of the space endowed with its natural inductive limit topology.

Using only abstract homological methods, we will provide an analogous description for similar weighted inductive limits of $C^m$ functions. As a very particular case, this contains recent results of Ortner and Wagner [2] about spaces $\mathscr{O}_c^m$ introduced by Horváth.

## References

[1] K.-D. Bierstedt, R. Meise, W. Summers, *A projective description of weighted inductive limits*, Trans. Amer. Math. Soc. 272 (1982), 107–160.

[2] N. Ortner, P. Wagner, *On the spaces $\mathscr{O}_c^m$ of John Horváth*, J. Math. Anal. Appl. 415 (2014), 62–74