Inductive limits of Fréchet spaces

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(LF)-spaces, that is, countable inductive limits of Fréchet spaces in the category of locally convex spaces, were introduced by Dieudonné and Schwartz and later on investigated by Grothendieck and many others.

In this minicourse we will show that several apparently technical "regularity problems" are essential for example in applications to partial differential operators, and we will present the complete solution of these problems for the class of inductive limits of Fréchet-Montel spaces. In particular, the last open problem from Grothendieck's thesis has a positive solution in this case.

We will briefly explain a concrete application to linear partial differential equations and, if the time permits, contrast the general results with (seemingly) similar questions in the category of locally m-convex algebras.