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Holomorphic Banach bundles over compact manifolds

A central result in complex geometry is the finiteness theorem of Cartan and Serre, according to which the cohomology groups of a finite rank holomorphic vector bundle over a compact base are finite dimensional. It is easy to convince oneself that holomorphic Banach bundles over a compact base may very well have infinite dimensional cohomology groups. Nevertheless, first Gohberg in the 1960s, and later Leiterer discovered a class of Banach bundles for which finiteness can be proved.

In the talk I will discuss a theorem on finite dimensionality of cohomology groups of Banach bundles, in a setting that includes Gohberg's and Leiterer's. Although cohomology groups are defined in terms of linear operators, the proof, interestingly, uses a piece of nonlinear analysis.