

## Generalized Filtrations of Banach and Fredholm Manifolds

**Abstract:** We extend the deformation to the normal cone and tangent groupoid constructions from finite-dimensional manifolds to infinite-dimensional Banach and Fredholm manifolds. Next, we generalize the concept of Fredholm filtrations to get a more flexible and functorial theory. In particular, we show that if  $M$  is a Banach (or Fredholm) manifold with generalized filtration  $\mathcal{F} = \{M_n\}_1^\infty$  by finite-dimensional submanifolds, then there are induced generalized filtrations  $T\mathcal{F} = \{TM_n\}_1^\infty$  of the tangent bundle  $TM$  and  $\mathbb{T}\mathcal{F} = \{\mathbb{T}M_n\}_1^\infty$  of the tangent groupoid  $\mathbb{T}M$ , which is not possible in the classical theory. This is joint work with Ahmad Reza.