FRÉCHET OPERATOR THEORY FOR THE MICROLOCAL ANALYSIS ON STRATIFIED SPACES

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Abstract. For singular manifolds, algebraic subsets of the n - dimensional euclidean space and for ramified spaces suitable operator algebras A are defined. For this it is convenient to consider stratifications (M. Banagl, Springer 2007, M.J. Pflaum Springer LNM 1768, 2001) with the attached general Sobolev spaces. We obtain in some special cases the algebra A as a countable projective limit of Banach algebras in analogy to the classical Hörmander classes of order zero. For the construction of the algebra A we use one parameter groups of homeomorphism respectively diffeomorphism on the stratification for which the strata are invariant sets. Some of the derived algebras A have a holomorphic functional calculus also in several commuting variables. A complex analytic homotopy theory for specific classes of Fredholm operators is indicated. The OkaGrauert principle can be developed for parameter dependent regular (e.g. Fredholm) operators; this applies also to the set of periodic geodesics in the manifold of idempotent elements. Fréchet algebras without spectral invariance can be treated from the point of view of complex analytic topology. The CalderonZygmund operator algebras are such classes after an appropriate completion. Some infinite composition series of ideals are constructed on infinite dimensional ramified spaces. The presented results are also connected to the dissertations of M. Höber (2007) and J. Ditsche (2008).