On a Complete Scale of Isomorphisms for Elliptic and Parabolic Pseudodifferential Boundary-Value Problems

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In monographs by J.-L.Lions and E.Magenes (1968) and by Ya.Roitberg (1996) theorems on complete scales of isomorphisms have been established which, roughly speaking, mean that operators generated by elliptic differential boundary-value problems are isomorghisms (Fredholm operators) between Sobolev-type spaces of functions with s and s-d derivatives, where d is the order of the the elliptic operator. The completeness of the scale means that s can be an arbitrary real number.

In a monogragh by S.Eidelman and N.Zhitarashu (1990) a theorem on a complete scale of isomorphisms has been obtained for parabolic differential initial boundary-value problems.

Due to the fact, that for elliptic and parabolic pseudodifferential initial boundary-value problems there exist parametrices belonging to the Boutet de Monvel algebra, a much shorter proof has been found as well as some applications of the results to the spectral theory.