

## Fredholm Operators in Spaces of Real Interpolation

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One of the important tasks of the interpolation theory is investigation of properties of linear operators in interpolation scales. In a recent joint work with N. Kruglyak and M. Mastyló, we studied the Fredholm property in the spaces of real interpolation  $\overline{X}_{\theta q}$ .

Let  $A$  be a bounded linear operator from a couple  $\overline{X} = (X_0, X_1)$  to a couple  $\overline{Y} = (Y_0, Y_1)$  such that the restrictions of  $A$  to the spaces  $X_0$  and  $X_1$  are Fredholm operators. We are interested in describing all parameters  $\theta$  and  $q$  such that the restriction of  $A$  to interpolation spaces  $\overline{X}_{\theta q}$  remains to be Fredholm.

In the talk we will discuss a general approach to the problem and, in particular, give necessary and sufficient conditions for the operator  $A: \overline{X}_{\theta q} \rightarrow \overline{Y}_{\theta q}$  to be a Fredholm operator in the case when the operators  $A: X_i \rightarrow Y_i$  ( $i = 0, 1$ ) are invertible and  $1 \leq q < \infty$ . These conditions are expressed in terms of the corresponding indices generated by the  $K$ -functional of elements from the kernel of the operator  $A$  in the interpolation sum  $X_0 + X_1$ .