Abstract

Explicit formulae for the K-functional for the general couple $((A_0, A_1)_{\Phi_0}, (A_0, A_1)_{\Phi_1})$, where (A_0, A_1) is a compatible couple of quasi-normed spaces, are proved. As a consequence, the corresponding reiteration theorems are derived. Optimal embeddings are proved for generalized inhomogeneous Sobolev spaces $W^k E$, built-up over quasi-normed rearrangement invariant spaces E that are intermediate for the couple (L^1, L^∞) on $\mathbf{R}^n$, $1 \leq k < n$, into quasi-normed rearrangement invariant spaces G. Both subcritical and critical cases are investigated and optimal spaces E, G are constructed and characterized.