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Comparison theorems in optimal recovery. (English) Zbl 0675.41035

Summary: [For the entire collection see Zbl 0673.00018.]

The problem of recovery of functions and functionals on the basis of a partial information is studied.
We present various results which show the monotone dependence of the error of the optimal recovery
scheme on the type of information. The following illustrates a typical comparison theorem: Denote by
$R(T)$ the error corresponding to the information data $T$. Then (* $R(T_1) < R(T_2)$ if $T_1 < T_2$, where the
last relation means that the information $T_1$ precedes $T_2$ according to some preassigned natural criteria.
Although the assertion (*) is usually intuitively clear, its proof relies upon difficult extremal problems.

MSC:
41A50 Best approximation, Chebyshev systems
41A30 Approximation by other special function classes
41A46 Approximation by arbitrary nonlinear expressions; widths and entropy

Keywords:
error of the optimal recovery scheme; comparison theorem; extremal problems