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A note on Gehring's lemma. (English)

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The celebrated result of *F. Gehring* [Acta Math. 130, 265-277 (1973; Zbl 0258.30021)] that the reverse Hölder inequality implies higher integrability can be reinterpreted as general interpolation scales of spaces: Gehring's result appears as an inverse of the reiteration formula of *T. Holmstedt* [Math. Scand. 26, 177-190 (1970; Zbl 0193.08801)]. The author shows that the estimate at one point of a scale implies the validity for other nearby points. This formulation gives the usual and weighted implications of the reverse Hölder inequality as well as applications to the interpolation theory of Sobolev spaces.

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Keywords : Gehring's lemma; reverse Hölder inequality; interpolation scales of spaces

Classification :

*42B25 Maximal functions

26D15 Inequalities for sums, series and integrals of real functions

46B70 Interpolation between normed linear spaces

46E35 Sobolev spaces and generalizations

30C65 Quasiconformal mappings in \mathbb{R}^n and other generalizations

Cited in ...