Naumann, J.; **Simader, C. G.**

A second look on definition and equivalent norms of Sobolev spaces. (English) Zbl 0941.46019

Math. Bohem. 124, No. 2-3, 315-328 (1999).

Summary: Sobolev's original definition of his spaces $L^{m,p}(\Omega)$ is revisited. It is only assumed that $\Omega \subseteq \mathbb{R}^n$ is a domain. With elementary methods, essentially based on Poincaré's inequality for balls (or cubes), the existence of intermediate derivates of functions $u \in L^{m,p}(\Omega)$ with respect to appropriate norms, and equivalence of these norms is proved.

MSC:

46E35 Sobolev spaces and other spaces of "smooth" functions, embedding theorems, trace theorems

Keywords:

Sobolev spaces; Poincaré's inequality; existence of intermediate derivates

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