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Necessary and sufficient conditions for imbeddings in weighted Sobolev spaces. (English)

Zbl 0704.46021

Čas. Pěstování Mat. 114, No. 4, 343-355 (1989).

The author gives necessary and sufficient conditions under which the weighted Sobolev space $W_p^1(\Omega; v_0, v_1, \dots, v_N)$ with norm

$$\|u\|^p = \int_{\Omega} |u(x)|^p v_0(x) dx + \sum_{i=1}^N \int_{\Omega} \left| \frac{\partial u}{\partial x_i}(x) \right|^p v_i(x) dx$$

is imbedded into the weighted Lebesgue space $L_q(\Omega; w)$ with norm

$$\|u\|^q = \int_{\Omega} |u(x)|^q w(x) dx.$$

Related work was previously done by *P. Gurka*, *A. Kufner*, and the author [see, e.g., *Math. Nachr.* 133, 63-70 (1987; Zbl 0639.46035), *Čas Pěst. Mat.* 113, 60-73 (1988)], or *Czechosl. Math. J.* 39, 78-94 (1989)].

Reviewer: [J.Appell](#)

MSC:

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

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