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David G. Costa* (costa@unlv.nevada.edu), Department of Mathematical Sciences, University of Nevada Las Vegas, Box 454020, Las Vegas, NV 89154-4020, **Djairo G. de Figueiredo**, Brazil, and **Jianfu Yang**, Peoples Rep of China. *Limiting Embeddings of Fractional Sobolev Spaces and Elliptic Systems with Critical Exponents.*

We consider embeddings of a class of fractional Sobolev spaces $E^s(\Omega)$ into their limiting $L^p(\Omega)$ spaces, $\Omega \subset \mathbb{R}^N$ a bounded domain, and study the relationship between the best constants for these embeddings and other best constants corresponding to the situation $\Omega = \mathbb{R}^N$. We show how such spaces and best constants play an important role in the variational formulation and study of elliptic systems of PDEs involving *critical exponents*. (Received March 01, 2004)