Abstract

In this talk, we first introduce three different variants of Banach function spaces including ball Banach function (BBF) spaces. Then we recall the celebrated (BBM) formulae of J. Bourgain, H. Brezis, and P. Mironescu and the recent surprising (BVY and BSVY) formulae of H. Brezis, A. Seeger, J. Van Schaftingen, and P.-L. Yung. Finally we present some recent extensions of these formulae to Sobolev spaces associated with BBF spaces.

In particular, we introduce some methods on how to overcome the difficulties caused by the lack of the translation invariance, the rotation invariance, and the explicit expression of the quasi-norm of BBF spaces under consideration.