SSBD SPACES AND MAXIMAL MONOTONICITY

STEPHEN SIMONS
UNIVERSITY OF CALIFORNIA

ABSTRACT. We introduce "SSDB spaces", which include Hilbert spaces, negative Hilbert spaces and spaces of the form E x E*, where E a reflexive real Banach space. We introduce q–positive" subsets of a SSDB space, which include monotone subsets of E x E*, and BC–functions" on a SSDB spaces, which include Fitzpatrick functions of monotone multifunctions. We show how convex analysis can be combined with SSDB space theory to obtain and generalize various results on maximally monotone multifunctions on a reflexive Banach space, such as the significant direction of Rockafellar's surjectivity theorem, sufficient conditions for the sum of maximally monotone multifunctions to be maximal monotone, and an abstract Brezis–Browder theorem.