On the Maximality of the Sum of Two Maximal Monotone Mappings in Banach Spaces*

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Let (X, X^*) be a pair of real reflexive Banach spaces, and X^* be X's dual space. We assume without loss of generality that X and X^* are strictly convex (See Asplund [1]). Let A and B be two maximal monotone mappings from X into 2^{X^*}. Attouch [2] has shown that when $X = X^*$ is a real Hilbert space, if $\mathrm{Int}(D(A) - D(B)) \ni 0$, then the sum $A+B$ is still maximal mapping. In this note, we improve Attouch's theorem.

Theorem Let A and B be two maximal monotone mappings from X into 2^{X^*}; Assume that $\mathrm{Int}(D(A) - D(B)) \ni 0$, then $A+B$ is a maximal monotone mapping.

References

[1] Asplund, E., Averaged norms, *Israel J. Math.*, 5(1967), pp. 227—233.

[2] Attouch, H., On the maximality of the sum of two maximal monotone operators, *Nonlinear Anal.*, v5, 2(1981), pp. 143—147.

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