
RAFAEL CORREA, Universidad de Chile

On Brøndsted-Rockafellar's Theorem for convex lower semicontinuous epi-pointed functions in locally convex spaces

It is known that the Brønsted-Rockafellar Theorem is not valid outside Banach spaces (see [1]). The motivation for this work is to answer the question of whether Brøndsted-Rockafellar is valid for convex functions defined on a locally convex space. The response we got is that it is valid for the class of functions called epi-pointed. Also we will see that the proof is direct in the sense that it is not based on Ekeland's or Bishop-Phelps' variational principle as the usual demonstrations. Furthermore, this result has as an immediate corollary the Brøndsted-Rockagellar Theorem in the setting of reflexive Banach spaces. Finally, we obtain Brøndsted-Rockagellar's Theorem, directly using our result in the framework of general Banach spaces.

References

- [1] A. Brøndsted and R. T. Rockafellar. On the subdifferentiability of convex functions. *Proc. Amer. Math. Soc.*, 16 (1965) 605-611.