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Comparing Fenchel-Moreau Conjugates with Level Set Conjugates

We compare the Fenchel-Moreau second conjugates associated to an arbitrary coupling function $\varphi : X \times W \rightarrow \overline{R} = [-\infty, +\infty]$ between two sets X and W with the second level set conjugates associated to the same coupling. For a coupling $\varphi : R^m \times R^n \rightarrow R = (-\infty, +\infty)$ that is additively homogeneous in one (or both) of the variables we also compare the first conjugates associated to the same coupling. We give an application to the “min-type” coupling function arising in the study of topical functions.

Keywords: Generalized conjugation, topical functions, hull operators.

MSC: 49N15, 26B25, 52A01.