

## A GENERAL TRANSFORMATION TO CANONICAL FORM FOR POTENTIALS IN PAIRWISE INTERMOLECULAR INTERACTIONS

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A generalized formulation of explicit transformations is introduced to investigate the concept of a canonical potential in both fundamental chemical and intermolecular bonding. Different classes of representative ground electronic state pairwise interatomic interactions are referenced to a single canonical potential illustrating application of explicit transformations. Specifically, accurately determined potentials of the diatomic molecules  $H_2$ ,  $H_2^+$ , HF, LiH, argon dimer, and one-dimensional dissociative coordinates in Ar-HBr, OC-HF, and OC-Cl<sub>2</sub> are investigated throughout their bound potentials. The advantages of the current formulation for accurately evaluating equilibrium dissociation energies and a fundamentally different unified perspective on nature of intermolecular interactions will be emphasized. In particular, this canonical approach has relevance to previous assertions that *there is no very fundamental distinction between van der Waals bonding and covalent bonding* or for that matter hydrogen and halogen bonds.