Nonconvex Vectorization Derived by an Extension of Gerstewitz's Function

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Vectorization is a reduction technique that replaces a set valued optimization problem with a vector optimization problem. In this work, by using an extension of Gerstewitz's function, a vectorization function is defined to reduce a set valued optimization problem given with respect to set less ordering. Some properties of this function are studied. In addition, relationships between set valued optimization problems and vector optimization problems, derived by vectorization of this set valued optimization problem, are examined. Furthermore, necessary and sufficient optimality conditions are presented without any convexity assumption.