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## Equivalent reference points in Multiobjective Programming

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### Abstract

In this paper, we concentrate on reference point based methods in multiobjective programming to demonstrate, as main contribution, that the solution to a multiobjective optimization problem stays unchanged if the reference point is changed to any point on a set defined by means of the original reference point, the nondominated objective solution and some parameters of the ASF. Concretely, this new set of “equivalent reference points” is the convex linear combination of two straight lines, one containing the original reference point and the other a nondominated objective solution, where the slope of both straight lines is given by the inverses of the weights of the ASF. An illustrative example is used to show the results obtained and an empirical model (application with real data) allows us to highlight possible implications.

**Keywords:** Multiobjective Programming, Reference Point, Achievement Scalarizing Function, interactive methods.

**Mathematics Subject Classification (2010 database):** 90C29, 90C90, 91B02.

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