

# FROM NONLINEAR LEAST SQUARES TO REFINEMENT OF THE CROSSOVER SELECTION IN THE DIFFERENTIAL EVOLUTION METHOD

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**Abstract.** *A refinement of the crossover selection in the differential evolution method (DEM) has been done and benchmark tested on fourteen well-known test functions, used in studies of global optimization. In many of the cases this leads to better results (in terms of mean and standard deviation) relative to the original DEM. Besides we present a typical case in which we apply DEM – solving a nonlinear least squares, used to model gas oil viscosity on the base of Walther’s empirical equation, using initial database of 41 primary and secondary vacuum gas oils. The talk is based on unpublished results and the article of D. Stratiev et al., Different Nonlinear Regression Techniques and Sensitivity Analysis as Tools to Optimize Oil Viscosity Modeling, Resources 2021, 10, 99. <https://doi.org/10.3390/resources10100099>.*

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