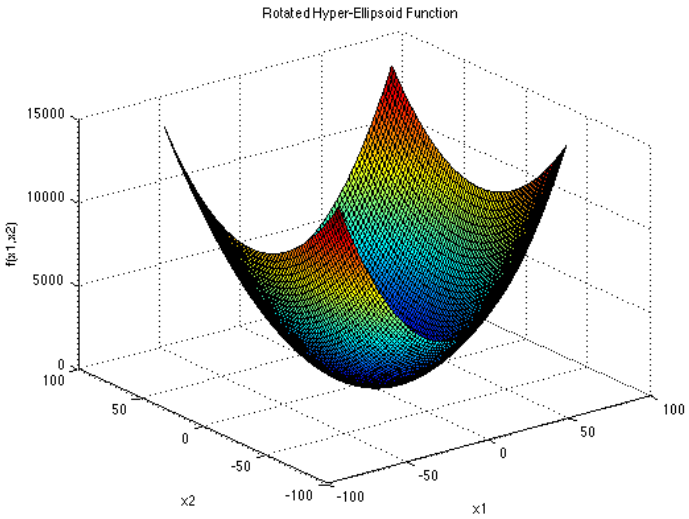
Virtual Library of Simulation Experiments:

Test Functions and Datasets

HOME
OPTIMIZATION
EMULATION/ PREDICTION
UNCERTAINTY QUANTIFICATION
MULTI FIDELITY SIMULATION
CALIBRATION/ TUNING
SCREENING
INTEGRATION
FUNCTIONAL DATA
ABOUT
OTHER TEST FUNCTIONS AND CODE

ROTATED HYPER-ELLIPSOID FUNCTION



$$f(\mathbf{x}) = \sum_{i=1}^{d} \sum_{j=1}^{i} x_j^2$$

Description:

Dimensions: d

The Rotated Hyper-Ellipsoid function is continuous, convex and unimodal. It is an extension of the Axis Parallel Hyper-Ellipsoid function, also referred to as the Sum Squares function. The plot shows its two-dimensional form.

Input Domain:

The function is usually evaluated on the hypercube $x_i \in [-65.536, 65.536]$, for all i = 1, ..., d.

Global Minimum:

$f(\mathbf{x}^*) = 0$, at $\mathbf{x}^* = (0, \ldots, 0)$

Code:

MATLAB Implementation

R Implementation

Reference:

Molga, M., & Smutnicki, C. Test functions for optimization needs (2005). Retrieved June 2013, from http://www.zsd.ict.pwr.wroc.pl/files/docs/functions.pdf.

For questions or comments, please email Derek Bingham at: dbingham@stat.sfu.ca.