

# Real Valued Test Functions

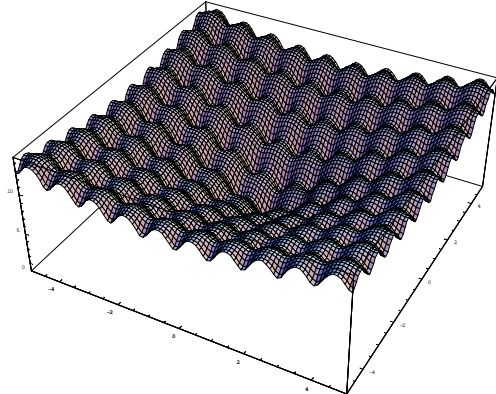
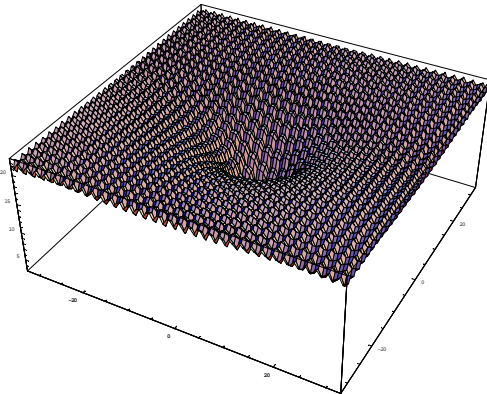
Heuristic and Evolutionary Algorithms Laboratory (HEAL)

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## Ackley Function

$$f(x) = 20 + e - 20 \cdot e^{-\frac{1}{5} \sqrt{\frac{1}{n} \sum_{i=1}^n x_i^2}} - e^{\frac{1}{n} \sum_{i=1}^n \cos(2\pi x_i)}$$

**Dimensions:**  $n$   
**Domain:**  $-32.768 \leq x_i \leq 32.768$   
**Global Optimum:**  $f(x) = 0.0$  at  $x = (0.0, 0.0, \dots, 0.0)$   
**Operator:** AckleyEvaluator  
**Charts:**



# Griewangk Function

$$f(x) = 1 + \sum_{i=1}^n \frac{x_i^2}{4000} - \prod_{i=1}^n \cos\left(\frac{x_i}{\sqrt{i}}\right)$$

**Dimensions:**  $n$   
**Domain:**  $-600.0 \leq x_i \leq 600.0$   
**Global Optimum:**  $f(x) = 0.0$  at  $x = (0.0, 0.0, \dots, 0.0)$   
**Operator:** GriewangkEvaluator  
**Charts:**

