High-dimensional approximation

Chapter I: Sparse grids — examples

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Full and sparse grids
Figure 3.3. Scheme of subspaces for $d = 2$. Each square represents one subspace $W_i$ with its associated grid points. The supports of the corresponding basis functions have the same mesh size $h_i$ and cover the domain $\Omega$.

Stolen from
Full grid vs. sparse grid in 2d

Stolen from
Sparse grids: grid points
Sparse grids in 2d
Sparse grids in 2d
Sparse grids in 2d
Sparse grids in 2d
Sparse grids in 2d
Sparse grids in 3d
Sparse grids in 3d
Sparse grids in 3d
Sparse grids in 3d
Sparse grids in 3d
Approximation on sparse grids:

First example
Approximation on sparse grids: First example
Approximation on sparse grids: First example
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Approximation on sparse grids: First example
Approximation on sparse grids: First example
Approximation on sparse grids: First example
Approximation on sparse grids: First example
Approximation on sparse grids:

Second example
Approximation on sparse grids: Second example
Approximation on sparse grids: Second example
Approximation on sparse grids: Second example
Approximation on sparse grids: Second example

![Graphs showing approximation on sparse grids]

- **Exact**: A graph representing the exact solution.
- **n = 3**: A graph showing the approximation for n = 3.
Approximation on sparse grids: Second example
Approximation on sparse grids: Second example
Approximation on sparse grids: Second example
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All numerical examples were made with the

**Sparse Grid Interpolation Toolbox**

written by Andreas Klimke (Universität Stuttgart)

This toolbox can be downloaded from

http://www.ians.uni-stuttgart.de/spinterp/