MESHFREE

Simulate with complex geometries and complex physics

MESHFREE

Online Documentation for MESHFREE

General information

The original method is called Finite Pointset Method (FPM) and is an originary development of the Fraunhofer Institute for Industrial Mathematics ITWM. The software **MESHFREE** couples FPM and the algebraic multigrid method implemented in SAMG, an originary development of the Fraunhofer Institute for Algorithms and Scientific Computing SCAI.

FPM is the deprecated name of the numerical simulation idea, publications of which can be found for example in https://www.meshfree.eu/en/publications.html. Now and the in future, we prefer the name *Generalized Finite Difference Method (GFDM)*, as this states exactly the character of the method and avoids confusion with other ideas, also abbreviated as FPM.

Note that FPM is still the name of several commercial software-instances outside of ITWM, putting the original FPM-ideas into practice.

MESHFREElite is the original FPM-software without SAMG.

How to use MESHFREE

- InstallationGuide: install the software
- GettingStarted: first steps with MESHFREE
- Releases: stay up-to-date with new/current developments
- InputFiles: quick reference to all items and functionalities provided to the user
- Indices and __Constants__: quick reference to all predefined variables and constants
- RunTimeTools: communication with a running simulation, performance measurements
- Solvers: underlying mathematical and numerical models
- Interfaces: overview of possible couplings of MESHFREE with other tools
- MESHFREEdocu: quick reference for developers, how to contribute to this documentation
- information on how to compile MESHFREE at ITWM moved to FPMsoftwareF95
  (information on how to work with git can be found here: Version Control with GIT)
- Windows version: collection of information

Highlights

Useful insight into PerformanceOptimization concerning geometry operations.

List of members:	
__Constants__	typical %...%-constants that can be used in the input files
Development	INTERNAL PAGE: ideas of further software/method development
Download	Download executables, documentation and examples
GettingStarted	first steps with MESHFREE
Indices	MESHFREE indices for simulation entities
InputFiles	Input files used for steering MESHFREE
InstallationGuide	Installation of MESHFREE
Interfaces	Interfaces to other simulation tools
MESHFREEdocu	reference based documentation of the MESHFREE code and MESHFREE functionality
PerformanceOptimization	useful insight into performance optimization
Releases	Information on the MESHFREE releases
RunTimeTools	tools regarding the run time
Solvers	Overview of numerical and geometrical algorithms used in MESHFREE
Support	How to contact the Support Team
Windows	collection of information on Windows version

Source file of this page: ../../FPM_src/FPM_main/FPM_main.f90