



# QUICKERSIM

CFD Toolbox for MATLAB®

version 2.3

## LIST OF FUNCTIONS

## General

Function Name	LITE	PRO	DEV
QuickerSim_exe	✓	✓	✓
QuickerSim_CFD_Toolbox	✓	✓	✓

## Import, Pre-processing and Mesh Operations

Function Name	LITE	PRO	DEV
AMR		✓	✓
computeWallDistance		✓	✓
convertMeshToFirstOrder	✓	✓	✓
convertMeshToSecondOrder	✓	✓	✓
courantNumber	✓	✓	✓
createFluidSolidInteface		✓	✓
deformMesh2D	✓	✓	✓
deformMeshRBF	✓	✓	✓
exportMeshFluent	✓	✓	✓
exportToVTK	✓	✓	✓
extractEdges		✓	✓
extrudeLayers		✓	✓
extrudeLayers2D		✓	✓
importMeshFluent	✓	✓	✓
importMeshGmsh	✓	✓	✓
initDeformMesh2D		✓	✓

initDeformMeshRBF		✓	✓
meshQuality	✓	✓	✓
meshRepair	✓	✓	✓
moveDataFromElementsToNodes	✓	✓	✓
nearWallInfo		✓	✓
nodeNormalVectors	✓	✓	✓
pointInTetra		✓	✓
pointInTriangle		✓	✓
prismsToTet		✓	✓
reduceMeshToFirstOrder	✓	✓	✓
smoothing2D		✓	✓
transformBoundaryToCfdFormat	✓	✓	✓

## Finite Element Discretisation

Function Name	LITE	PRO	DEV
addUnsteadyTerms		✓	✓
addUnsteadyTerms2D		✓	✓
assembleConfigurationFactorMatrix		✓	✓
assembleCrossDiffusionMatrix		✓	✓
assembleCrossDiffusionMatrix2D	✓	✓	✓
assembleDiffusionMatrix		✓	✓
assembleDiffusionMatrix2D	✓	✓	✓
assembleEulerProblem		✓	✓
assembleEulerProblem2D		✓	✓
assembleMassMatrix		✓	✓
assembleMassMatrix2D		✓	✓
assembleNavierStokesMatrix	✓	✓	✓
assembleNavierStokesMatrix2D	✓	✓	✓
assembleScalarConvectionMatrix		✓	✓
assembleScalarConvectionMatrix2D	✓	✓	✓
assembleScalarSourceTerm		✓	✓
assembleScalarSourceTerm2D		✓	✓
assembleShallowWaterMatrix1D	✓	✓	✓
assembleShallowWaterMatrix2D		✓	✓
assembleStokesMatrix		✓	✓

assembleStokesMatrix2D	✓	✓	✓
assembleVectorSourceTerm		✓	✓
assembleVectorSourceTerm2D	✓	✓	✓
computeGradientMatrix		✓	✓
computeGradientMatrix2D	✓	✓	✓
imposeCfdBoundaryCondition	✓	✓	✓
imposeCfdBoundaryCondition2D	✓	✓	✓
imposeScalarBoundaryCondition	✓	✓	✓
imposeScalarBoundaryCondition2D	✓	✓	✓
imposeShallowWaterBoundaryCondition1D	✓	✓	✓
imposeShallowWaterBoundaryCondition2D	✓	✓	✓

## Solvers, Examples & Models

Function Name	LITE	PRO	DEV
genericCompressibleSolver	✓	✓	✓
genericCompressibleSolver2D	✓	✓	✓
genericFlowSolver2D	✓	✓	✓
genericFlowSolver3D	✓	✓	✓
genericHeatFlowSolver2D	✓	✓	✓
genericHeatFlowSolver3D	✓	✓	✓
genericHeatFlowTurbulentSolver2D	✓	✓	✓
genericHeatFluidSolidTurbulentSolver3D	✓	✓	✓
genericHeatSolver2D	✓	✓	✓
genericHeatSolver3D	✓	✓	✓
genericSolverDeformingMesh	✓	✓	✓
genericSolverPorous	✓	✓	✓
genericTurbulentSolver2D	✓	✓	✓
genericTurbulentSolver3D	✓	✓	✓
genericUnsteadyFlow2D	✓	✓	✓
genericUnsteadyFlow3D	✓	✓	✓
genericUnsteadyHeat2D	✓	✓	✓
genericUnsteadyHeat3D	✓	✓	✓
genericShallowWaterSolver1D	✓	✓	✓
genericShallowWaterSolver2D	✓	✓	✓
solveShallowWaterEquations	✓	✓	✓

solveTurbulence		✓	✓
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## Solution Proses

Function Name	LITE	PRO	DEV
computeResiduals	✓	✓	✓
computeScalarResiduals	✓	✓	✓
computeCompressibleResiduals	✓	✓	✓
generateIndices	✓	✓	✓
generateIndices2D	✓	✓	✓
generatePressureData	✓	✓	✓
initCompressibleSolution	✓	✓	✓
initScalarSolution	✓	✓	✓
initSolution	✓	✓	✓
initTurbulenceModel		✓	✓
iterativeSolver		✓	✓
linearSolver		✓	✓
plotCompressibleResiduals	✓	✓	✓
plotResiduals	✓	✓	✓
plotScalarResiduals	✓	✓	✓
weightedPressureJump	✓	✓	✓



## Export and Post-processing

Function Name	LITE	PRO	DEV
boundaryFlux	✓	✓	✓
boundaryFlux2D	✓	✓	✓
boundaryIntegral	✓	✓	✓
boundaryIntegral2D	✓	✓	✓
compressibleSolution	✓	✓	✓
computeForce	✓	✓	✓
computeMoment	✓	✓	✓
displayMesh	✓	✓	✓
displayMesh2D	✓	✓	✓
displaySolution	✓	✓	✓
displaySolution2D	✓	✓	✓
displaySurfaceSolution	✓	✓	✓
displayShallowWaterSolution1D	✓	✓	✓
domainIntegral	✓	✓	✓
domainIntegral2D	✓	✓	✓
exportStl		✓	✓
exportToGmsh	✓	✓	✓
exportToGmsh2D	✓	✓	✓
exportToTecplot		✓	✓
extractBoundary	✓	✓	✓
extractDataAlongLine	✓	✓	✓

extractDataAlongLine3D	✓	✓	✓
extractDataOnSurface	✓	✓	✓
extractNodeIdsOnEdges	✓	✓	✓
extractNodeIdsOnFaces	✓	✓	✓
initMovie	✓	✓	✓
mapOntoPlane	✓	✓	✓
plotAlongPath	✓	✓	✓
shearRate	✓	✓	✓
solutionGradient		✓	✓
solutionGradient2D		✓	✓
viewCase	✓	✓	✓
vorticity	✓	✓	✓
yPlus		✓	✓