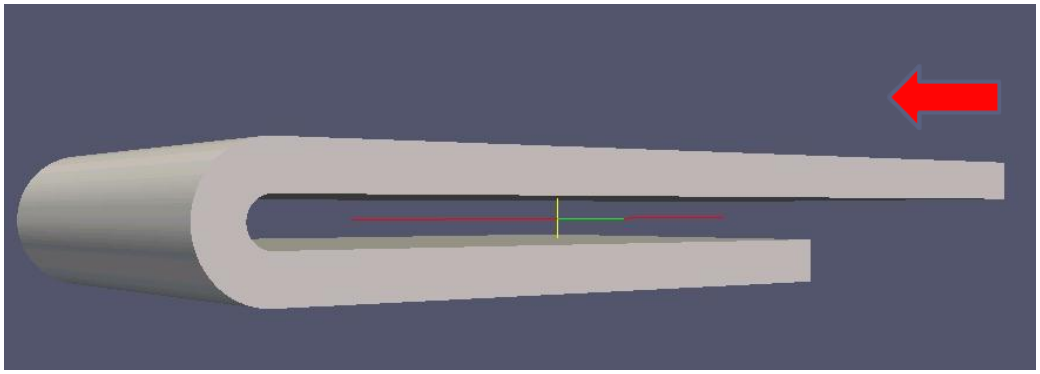
①Tutorialにない計算の実行

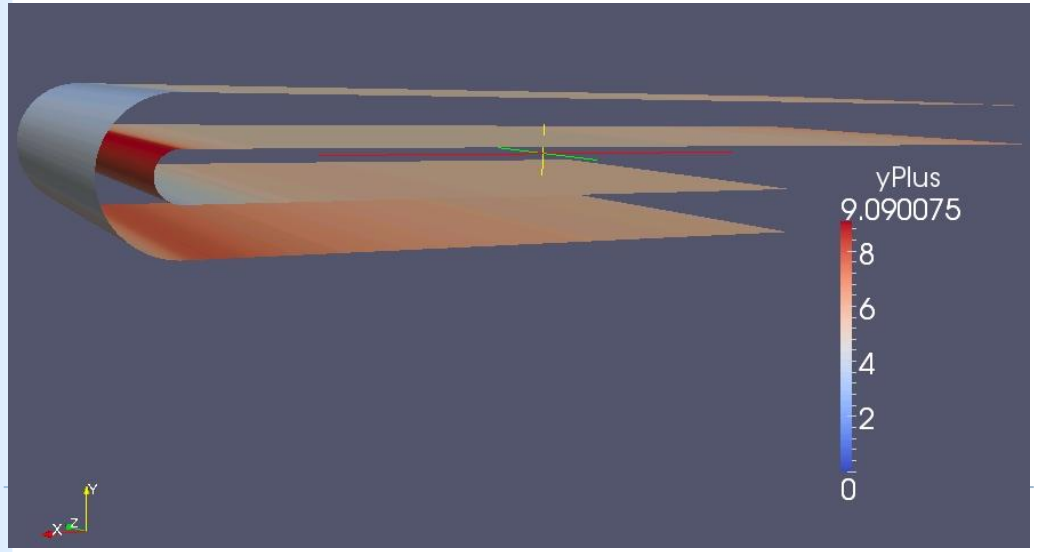
解析事例1・・・U-Bend　2D SimpleFoam　38000セル　P.Durbin AIAA 2003-765

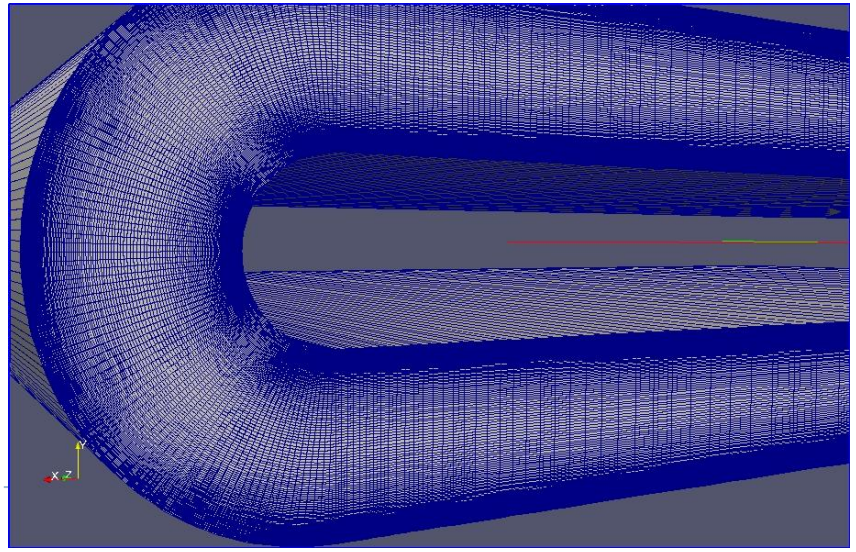


・inlet：31.7[m/sec]

・y+ = 3～9

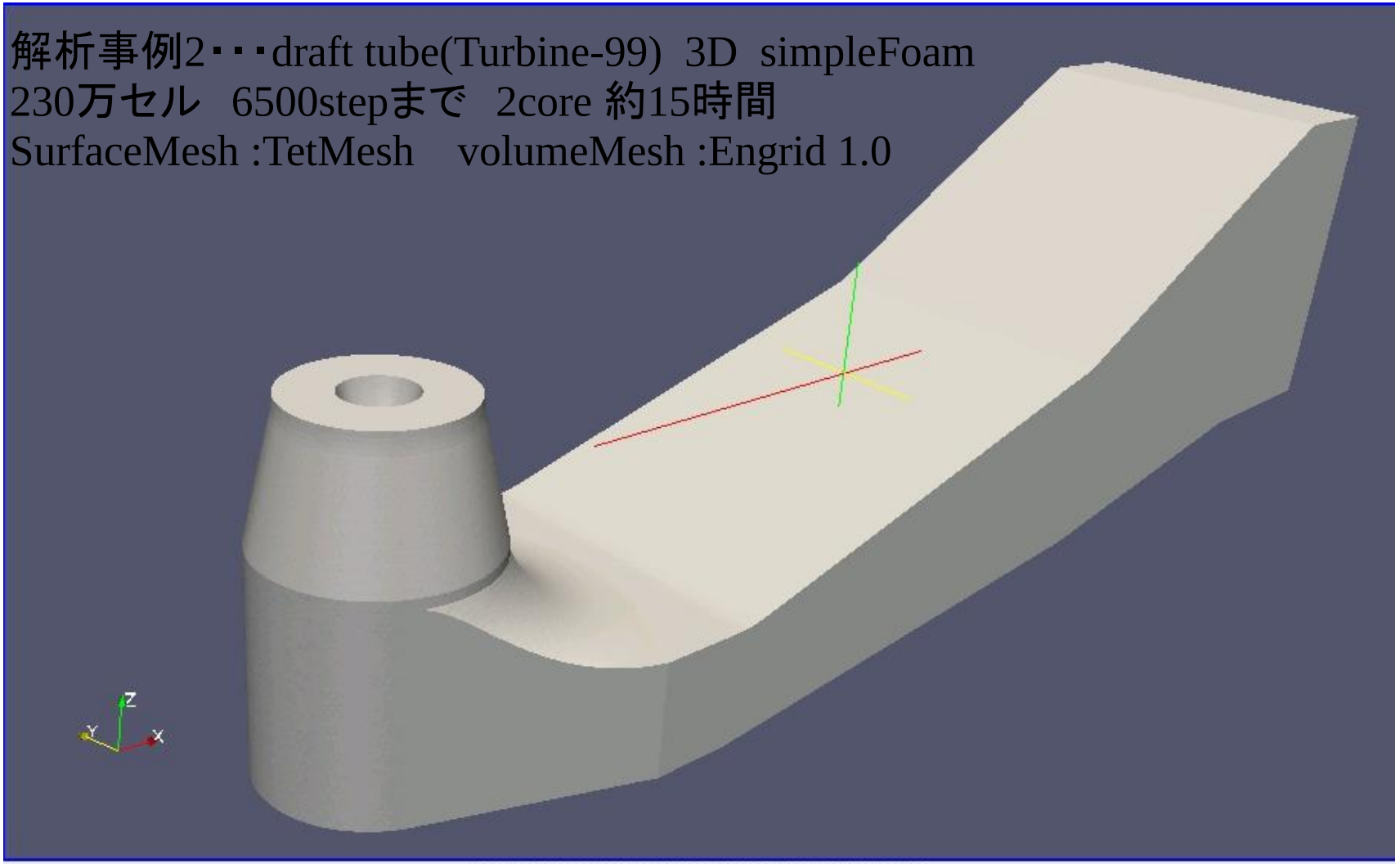
・壁関数使用





①Tutorialにない計算の実行

解析事例2･･･draft tube(Turbine-99) 3D simpleFoam
230万セル 6500stepまで 2core 約15時間
SurfaceMesh :TetMesh volumeMesh :Engrid 1.0

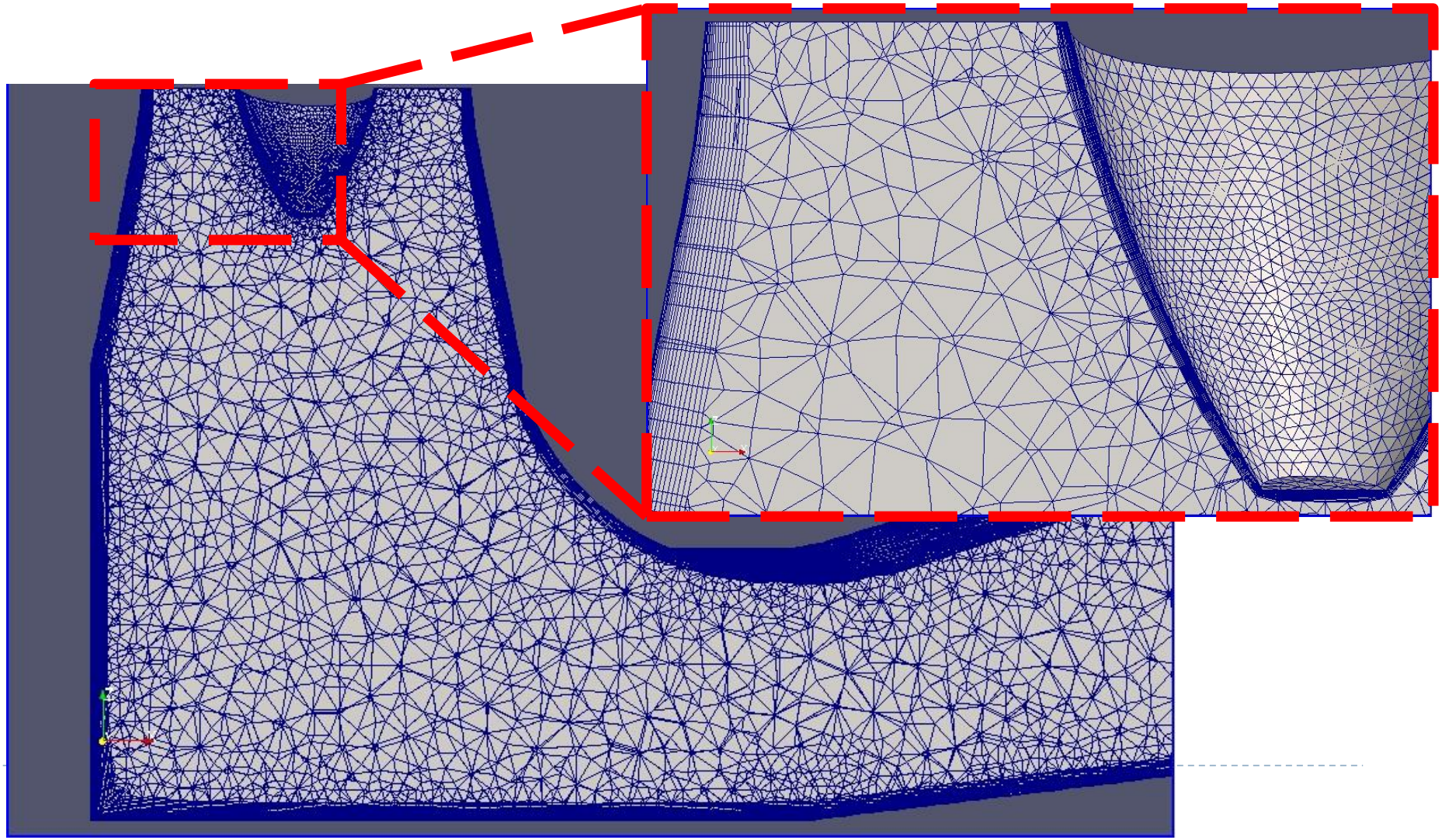


Statistics Inspector

Name	Data Type	No. of Cells	No. of Points	Memory (MB)	eometry Size (MI	Spatial Bounds	Temporal Bounds
drafttube.Ope···	Multi-block Dataset	2291080	996684	264.916	11.279	[-0.309, 3.61], [-0.5, 0.5], [···	[0, 6.5e+03]

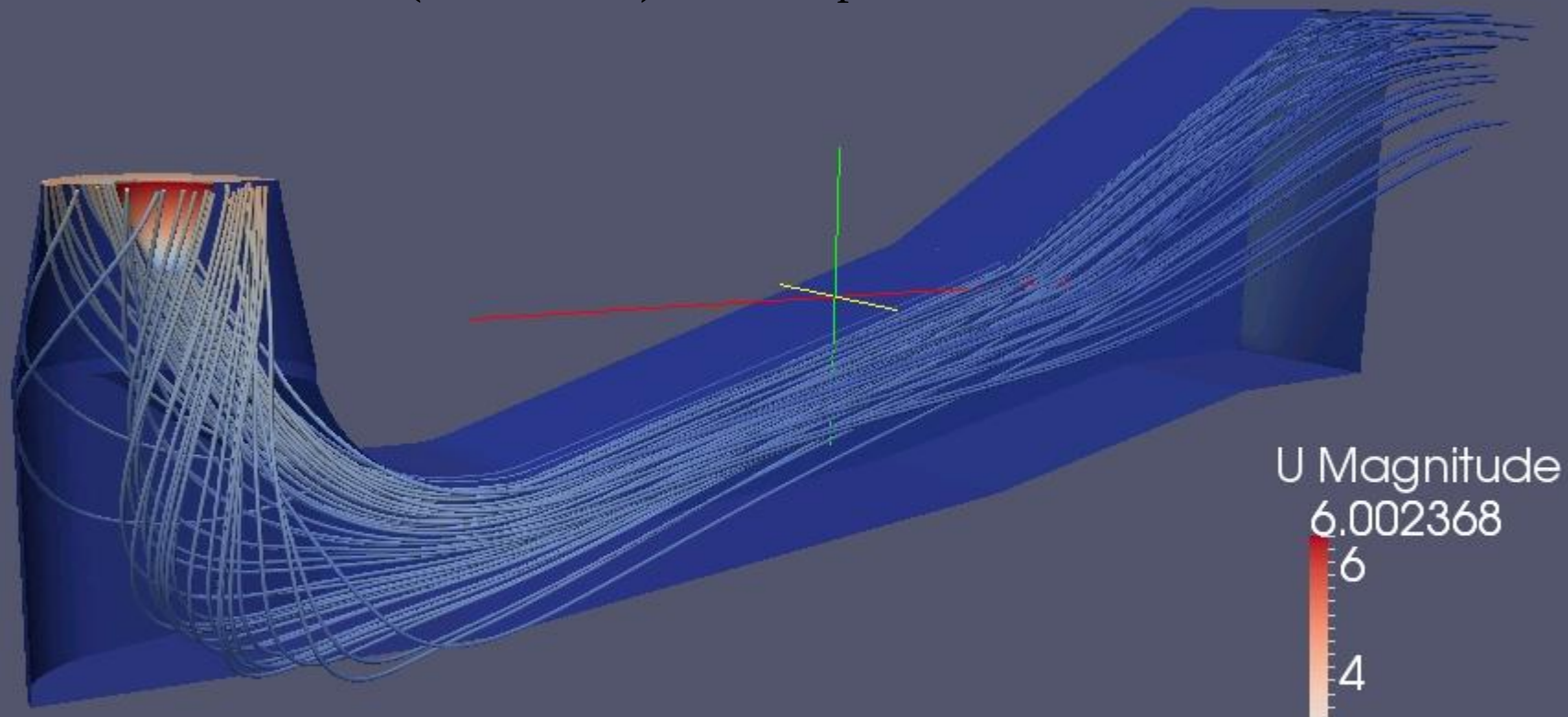
①Tutorialにない計算の実行

解析事例2･･･draft tube(Turbine-99) 3D simpleFoam



①Tutorialにない計算の実行

解析事例2・・・draft tube(Turbine-99) 3D simpleFoam

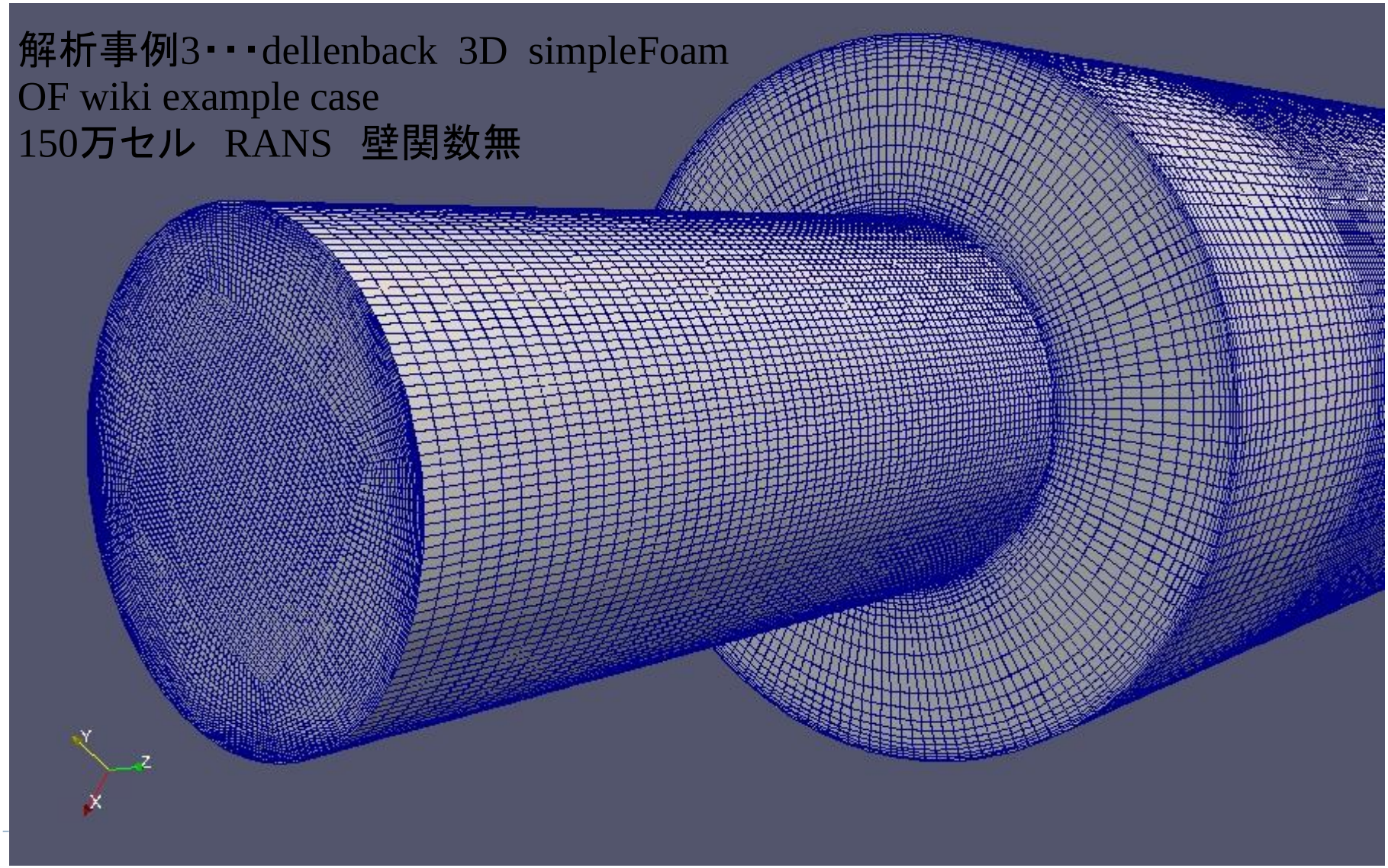


Inlet condition : OPENTURBO・・・旋回流入条件

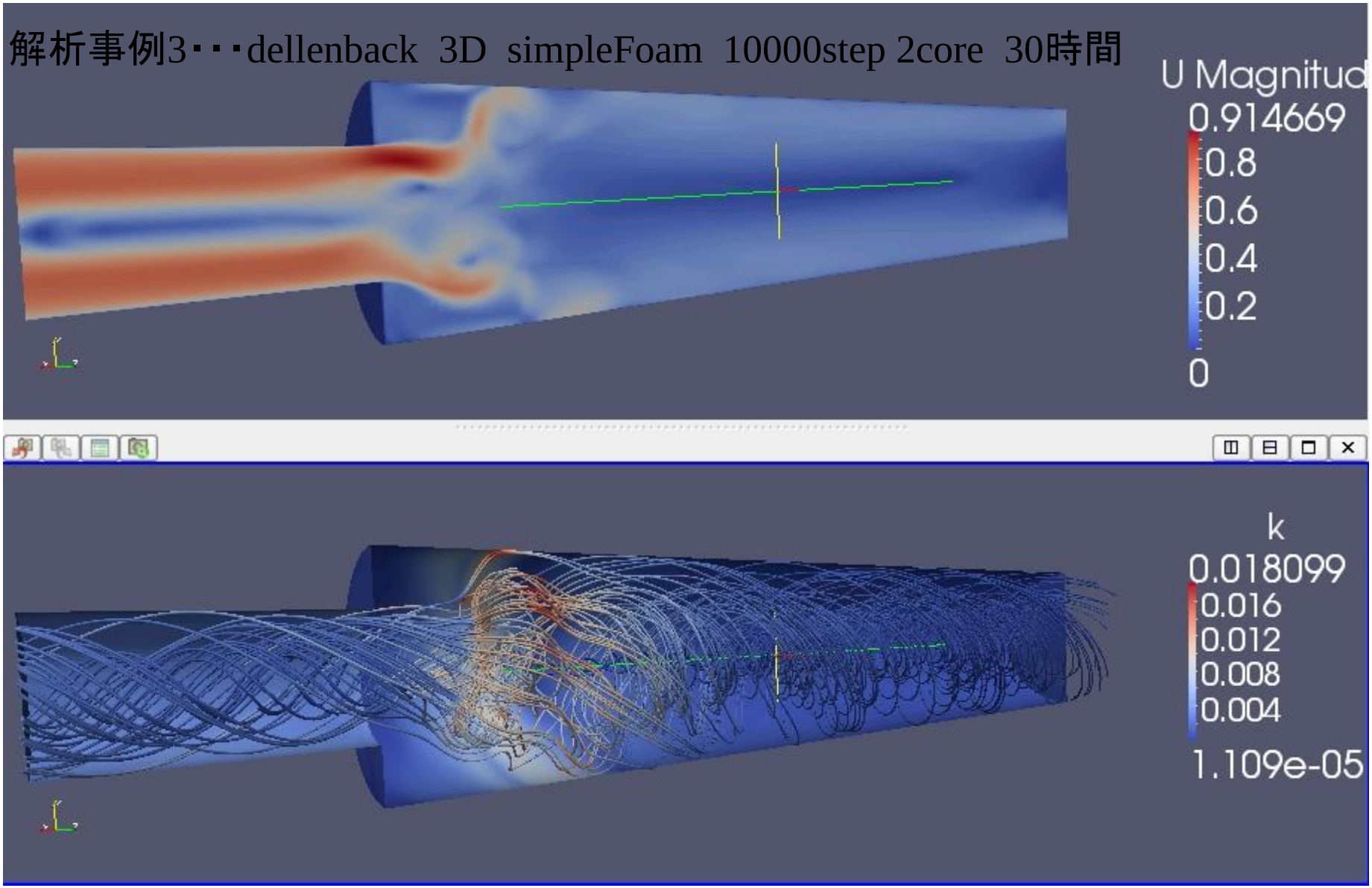
径・周・軸方向速度は実験のprofile使用

①Tutorialにない計算の実行

解析事例3･･･dellenback 3D simpleFoam
OF wiki example case
150万セル RANS 壁関数無



①Tutorialにない計算の実行



②線形ソルバのスイッチによる高速化

GAMGソルバの適用・・・速度1.5～2倍

U-bend
Kepsilon GAMG 463sec
Kepsilon PCG 763sec

```
p                       // linear equation system solver for p
{
    solver          GAMG;                   // very  efficient multigrid  solver
    tolerance       1e-07;                  // solver  finishes if  either absolute
    relTol          0.001;                  // tolerance  is  reached  or  the  relative
                                            // tolerance  here
    minIter         3;                      // a  minimum number of iterations
    maxIter         100;                    // limitation of  iterions number
    smoother        DIC;                    // setting for  GAMG
    nPreSweeps      1;                      // 1 for p, set to 0 for all other!
    nPostSweeps     2;                      // 2 is fine
    nFinestSweeps   2;                      // 2 is fine
    scaleCorrection true;                   // true is fine
    directSolveCoarsestLevel false;         // false is fine
    cacheAgglomeration on;                  // on is fine; set to off, if dynamic
                                            // mesh refinement is used!
    nCellsInCoarsestLevel 500;              // 500 is fine,
                                            // otherwise sqrt(number of cells)
    agglomerator    faceAreaPair;           // faceAreaPair is fine
    mergeLevels     1;                      // 1 is fine
}
```

③extension moduleのインストール作業進捗（8月から進展無）

・LTTExtension(1.6.x)内のthickened flame LESソルバのコンパイル→未達
ベースのOF1.5-devとOF1.7系でthermophysicalmodel内のライブラリが変更
combustionThermo → reactionThermo

エラーメッセージ
ようやく、ここまで低減！

```
In file included from thickenedFlameOodles.C:58:
createFields.H: In function ‘int main(int, char**)’:
createFields.H:8: error: ‘thermo’ was not declared in this scope
In file included from thickenedFlameOodles.C:63:
setInitialDeltaT.H:35: error: ‘CoNum’ was not declared in this scope
In file included from thickenedFlameOodles.C:86:
XiFoam/UEqn.H:5: error: ‘class Foam::compressible::turbulenceModel’ has no member named ‘divDevRhoBeff’
thickenedFlameOodles.C:118: error: ‘class Foam::compressible::turbulenceModel’ has no member named ‘muSgs’
readPISOControls.H:14: warning: unused variable ‘nOuterCorr’
createFields.H:12: warning: unused variable ‘hu’
```

・OF Turbo Groupのモジュール・・・OpenFoamTurboを1.7上でコンパイル→達成
旋回流入条件設定に使用

・pyFoam・・・最近存在を再認識、収束条件確認・モデル修正に役立ちそう
→ダウンロード未達、これから勉強

（おまけ）マシン間での性能比較

使用マシン(OSはいずれもOpenSUSE 11.2)

①intel Core i7 920 4core 2.66GHz memory:12GB(トリプルチャネル)

・・・HyperThreadingTechnology、4 ⇒ 8 parallel、TDP 130W

②AMD Phenom Ⅱ X6 1055T（低電圧版）6core 2.8GHz memory:8GB

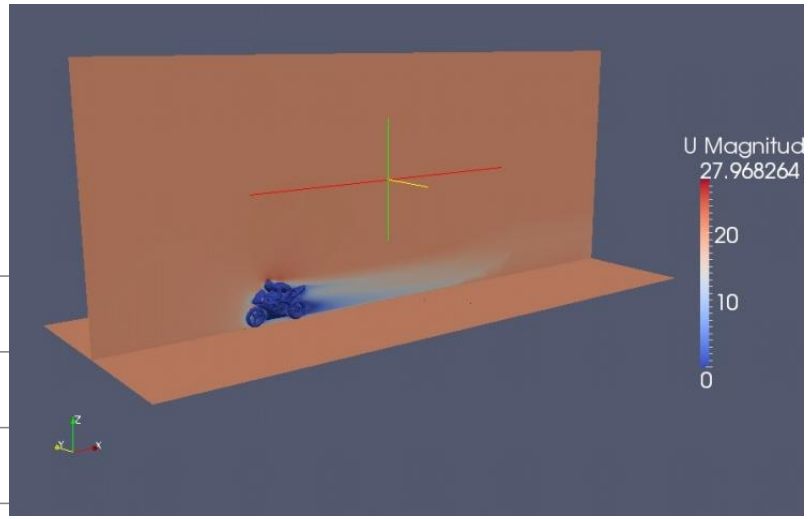
・・・Turbo CORE(アクティブなcoreが3個以下なら3.3GHzで動作)、TDP 95W

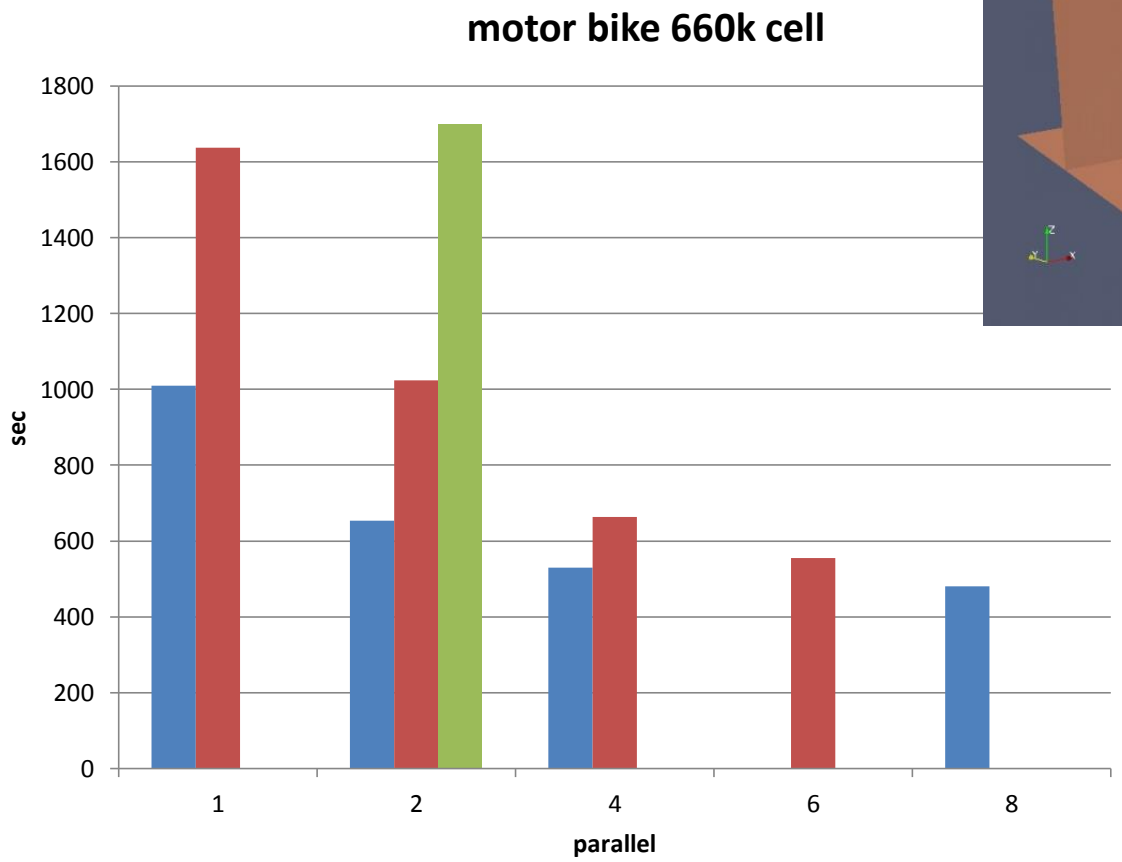
※参考　hp notePC Core2duo P8600 2core 2.4GHz memory:3GB

※使用しているバージョンが若干異なる
intel core i7/ core2duo ・・・ OF1.7.0　AMD Phenom X6 ・・・ OF1.7.1

（おまけ）マシン間での性能比較

その１：simpleFoam　motorbike



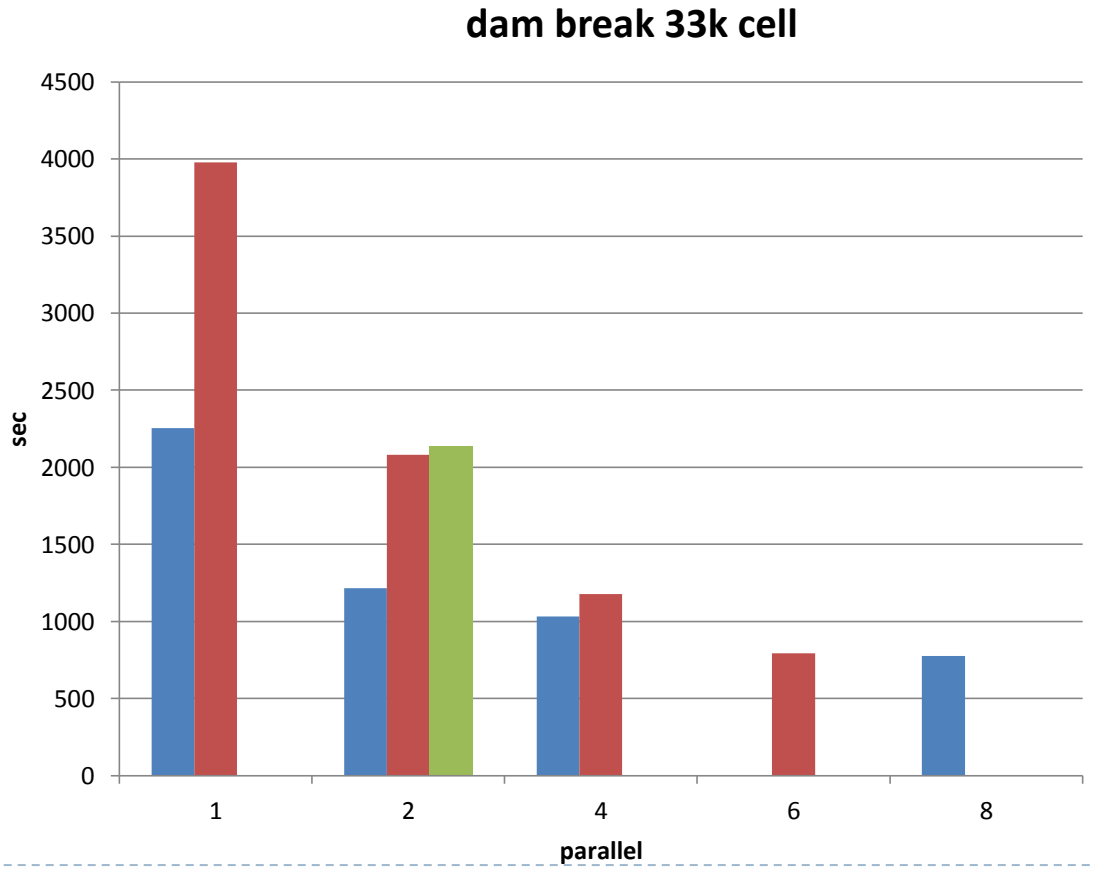


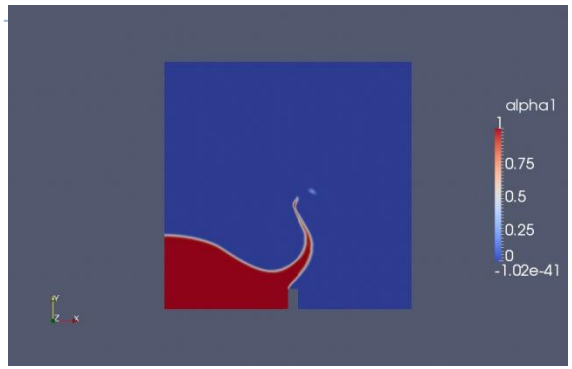
	motor bike		
cpu	core i7	phenom X6	core2duo
1	1010	1637	
2	654	1024	1699
4	530	664	
6		555	
8	481		

（おまけ）マシン間での性能比較

その2：interFoam　dambreak

(laminar, refine mesh)





	dam break		
cpu	core i7	phenom X6	core2duo
1	2255	3978	
2	1214	2080	2141
4	1032	1176	
6		794	
8	774		