基于openEuler的Elmer软件测试报告

1   规范性自检

项目使用了Artistic Style对文件进行格式化

AStyle，即Artistic Style，是一个可用于C, C++, C++/CLI, Objective-C, C# 和Java编程语言格式化和美化的工具。我们在使用编辑器的缩进（TAB）功能时，由于不同编辑器的差别，有的插入的是制表符，有的是2个空格，有的是4个空格。这样如果别人用另一个编辑器来阅读程序时，可能会由于缩进的不同，导致阅读效果一团糟。为了解决这个问题，使用C++开发了一个插件，它可以自动重新缩进，并手动指定空格的数量，自动格式化源文件。它是可以通过命令行使用，也可以作为插件，在其他IDE中使用。

文件格式化配置参考文件 `config/elmer.astylerc`，文件内容如下

```
1  # ELMER formatting options for Artistic Style
2  --style=allman
3  --indent=spaces=3
4  --keep-one-line-statements
5  --keep-one-line-blocks
6  --pad-header
7  --max-code-length=80
8  --max-instatement-indent=80
9  --min-conditional-indent=0
10 --indent-col1-comments
11 --indent-labels
12 --break-after-logical
13 --add-brackets
14 --indent-switches
15 --convert-tabs
16 --lineend=linux
17 --suffix=none
18 --preserve-date
19 --formatted
```

对于当前项目，检查代码规范性，可以通过使用AStyle对所有源码进行重新格式化，然后使用git查看文件修改。

统计代码不规范内容。

1.1   选择统计文件类型

统计项目文件类型及其文件数量

使用python编写脚本文件

```
1  # -*- coding: utf-8 -*-
2
```

```python
import os

print (os.getcwd())

def getAllFiles(targetDir):
    files = []
    listFiles = os.listdir(targetDir)
    for i in range(0, len(listFiles)):
        path = os.path.join(targetDir, listFiles[i])
        if os.path.isdir(path):
            files.extend(getAllFiles(path))
        elif os.path.isfile(path):
            files.append(path)
    return files

all_files=getAllFiles(os.curdir)
type_dict=dict()

for each_file in all_files:
    if os.path.isdir(each_file):
        type_dict.setdefault("文件夹",0)
        type_dict["文件夹"]+=1
    else:
        ext=os.path.splitext(each_file)[1]
        type_dict.setdefault(ext,0)
        type_dict[ext]+=1

for each_type in type_dict.keys():
    print ("当前文件夹下共有【%s】的文件%d个" %
(each_type,type_dict[each_type]))
```

在 `Elmer` 项目根目录下运行,运行结果如下:

```
分析文件夹: /home/season/elmerfem-scc20_kml
当前文件夹下共有后缀名为【.cmake】的文件3282个
当前文件夹下共有后缀名为【空】的文件2542个
当前文件夹下共有后缀名为【.f】的文件1589个
当前文件夹下共有后缀名为【.sif】的文件1443个
当前文件夹下共有后缀名为【.make】的文件1230个
当前文件夹下共有后缀名为【.txt】的文件1127个
当前文件夹下共有后缀名为【.grd】的文件1047个
当前文件夹下共有后缀名为【.o】的文件971个
当前文件夹下共有后缀名为【.c】的文件748个
当前文件夹下共有后缀名为【.marks】的文件663个
当前文件夹下共有后缀名为【.d】的文件483个
当前文件夹下共有后缀名为【.internal】的文件468个
```

14	当前文件夹下共有后缀名为【.F90】的文件453个
15	当前文件夹下共有后缀名为【.nodes】的文件380个
16	当前文件夹下共有后缀名为【.elements】的文件380个
17	当前文件夹下共有后缀名为【.boundary】的文件380个
18	当前文件夹下共有后缀名为【.header】的文件380个
19	当前文件夹下共有后缀名为【.h】的文件337个
20	当前文件夹下共有后缀名为【.png】的文件290个
21	当前文件夹下共有后缀名为【.gif】的文件268个
22	当前文件夹下共有后缀名为【.ts】的文件248个
23	当前文件夹下共有后缀名为【.cpp】的文件247个
24	当前文件夹下共有后缀名为【.so】的文件230个
25	当前文件夹下共有后缀名为【.html】的文件177个
26	当前文件夹下共有后缀名为【.msh】的文件138个
27	当前文件夹下共有后缀名为【.f90】的文件136个
28	当前文件夹下共有后缀名为【.names】的文件123个
29	当前文件夹下共有后缀名为【.hpp】的文件123个
30	当前文件夹下共有后缀名为【.dat】的文件105个
31	当前文件夹下共有后缀名为【.stamp】的文件104个
32	当前文件夹下共有后缀名为【.mod】的文件103个
33	当前文件夹下共有后缀名为【.build】的文件100个
34	当前文件夹下共有后缀名为【.geo】的文件58个
35	当前文件夹下共有后缀名为【.jpg】的文件56个
36	当前文件夹下共有后缀名为【.definitions】的文件49个
37	当前文件夹下共有后缀名为【.tcl】的文件39个
38	当前文件夹下共有后缀名为【.eg】的文件33个
39	当前文件夹下共有后缀名为【.xml】的文件33个
40	当前文件夹下共有后缀名为【.shared】的文件33个
41	当前文件夹下共有后缀名为【.in2d】的文件30个
42	当前文件夹下共有后缀名为【.ui】的文件28个
43	当前文件夹下共有后缀名为【.director】的文件24个
44	当前文件夹下共有后缀名为【.sh】的文件24个
45	当前文件夹下共有后缀名为【.lua】的文件22个
46	当前文件夹下共有后缀名为【.mif】的文件21个
47	当前文件夹下共有后缀名为【.xy】的文件19个
48	当前文件夹下共有后缀名为【.out】的文件17个
49	当前文件夹下共有后缀名为【.py】的文件15个
50	当前文件夹下共有后缀名为【.ico】的文件14个
51	当前文件夹下共有后缀名为【.rc】的文件13个
52	当前文件夹下共有后缀名为【.cm】的文件13个
53	当前文件夹下共有后缀名为【.pro】的文件12个
54	当前文件夹下共有后缀名为【.ttf】的文件12个
55	当前文件夹下共有后缀名为【.log】的文件9个
56	当前文件夹下共有后缀名为【.1】的文件9个
57	当前文件夹下共有后缀名为【.0】的文件8个
58	当前文件夹下共有后缀名为【.bat】的文件8个
59	当前文件夹下共有后缀名为【.IN】的文件8个
60	当前文件夹下共有后缀名为【.a】的文件7个

```
61  当前文件夹下共有后缀名为【.result】的文件7个
62  当前文件夹下共有后缀名为【.in】的文件7个
63  当前文件夹下共有后缀名为【.md】的文件7个
64  当前文件夹下共有后缀名为【.step】的文件6个
65  当前文件夹下共有后缀名为【.stl】的文件6个
66  当前文件夹下共有后缀名为【.umf】的文件6个
67  当前文件夹下共有后缀名为【.prb】的文件5个
68  当前文件夹下共有后缀名为【.cnd】的文件5个
69  当前文件夹下共有后缀名为【.mat】的文件5个
70  当前文件夹下共有后缀名为【.m】的文件5个
71  当前文件夹下共有后缀名为【.off】的文件5个
72  当前文件夹下共有后缀名为【.smesh】的文件5个
73  当前文件夹下共有后缀名为【.cam】的文件5个
74  当前文件夹下共有后缀名为【.cc】的文件5个
75  当前文件夹下共有后缀名为【.lin】的文件4个
76  当前文件夹下共有后缀名为【.sif_old】的文件4个
77  当前文件夹下共有后缀名为【.src】的文件4个
78  当前文件夹下共有后缀名为【.qrc】的文件4个
79  当前文件夹下共有后缀名为【.ply】的文件4个
80  当前文件夹下共有后缀名为【.terms】的文件4个
81  当前文件夹下共有后缀名为【.sed】的文件4个
82  当前文件夹下共有后缀名为【.F】的文件3个
83  当前文件夹下共有后缀名为【.bin】的文件3个
84  当前文件夹下共有后缀名为【.poly】的文件3个
85  当前文件夹下共有后缀名为【.brep】的文件3个
86  当前文件夹下共有后缀名为【.cxx】的文件3个
87  当前文件夹下共有后缀名为【.graph】的文件3个
88  当前文件夹下共有后缀名为【.dep】的文件3个
89  当前文件夹下共有后缀名为【.rua】的文件3个
90  当前文件夹下共有后缀名为【.pvsm】的文件3个
91  当前文件夹下共有后缀名为【.def】的文件2个
92  当前文件夹下共有后缀名为【.KEYWORDS】的文件2个
93  当前文件夹下共有后缀名为【.dat_ref】的文件2个
94  当前文件夹下共有后缀名为【.pos】的文件2个
95  当前文件夹下共有后缀名为【.good】的文件2个
96  当前文件夹下共有后缀名为【.best0】的文件2个
97  当前文件夹下共有后缀名为【.data】的文件2个
98  当前文件夹下共有后缀名为【.ep】的文件2个
99  当前文件夹下共有后缀名为【.ini】的文件2个
100 当前文件夹下共有后缀名为【.qs】的文件2个
101 当前文件夹下共有后缀名为【.stp】的文件2个
102 当前文件夹下共有后缀名为【.iges】的文件2个
103 当前文件夹下共有后缀名为【.ac】的文件2个
104 当前文件夹下共有后缀名为【.BMP】的文件2个
105 当前文件夹下共有后缀名为【.pdf】的文件2个
106 当前文件夹下共有后缀名为【.old】的文件2个
107 当前文件夹下共有后缀名为【.mac】的文件2个
```

108 当前文件夹下共有后缀名为【.lst】的文件2个
109 当前文件夹下共有后缀名为【.css】的文件2个
110 当前文件夹下共有后缀名为【.2】的文件2个
111 当前文件夹下共有后缀名为【.3】的文件2个
112 当前文件夹下共有后缀名为【.check_cache】的文件1个
113 当前文件夹下共有后缀名为【.commented】的文件1个
114 当前文件夹下共有后缀名为【.yml】的文件1个
115 当前文件夹下共有后缀名为【.pri】的文件1个
116 当前文件夹下共有后缀名为【.xcf】的文件1个
117 当前文件夹下共有后缀名为【.yy】的文件1个
118 当前文件夹下共有后缀名为【.ll】的文件1个
119 当前文件夹下共有后缀名为【.icc】的文件1个
120 当前文件夹下共有后缀名为【.unv】的文件1个
121 当前文件夹下共有后缀名为【.mphtxt】的文件1个
122 当前文件夹下共有后缀名为【.node】的文件1个
123 当前文件夹下共有后缀名为【.mtr】的文件1个
124 当前文件夹下共有后缀名为【.FDNEUT】的文件1个
125 当前文件夹下共有后缀名为【.gz】的文件1个
126 当前文件夹下共有后缀名为【.p】的文件1个
127 当前文件夹下共有后缀名为【.m4】的文件1个
128 当前文件夹下共有后缀名为【.cur】的文件1个
129 当前文件夹下共有后缀名为【.LOG】的文件1个
130 当前文件夹下共有后缀名为【.bmp】的文件1个
131 当前文件夹下共有后缀名为【.rgb】的文件1个
132 当前文件夹下共有后缀名为【.xmi】的文件1个
133 当前文件夹下共有后缀名为【.jpeg】的文件1个
134 当前文件夹下共有后缀名为【.dockerfile】的文件1个
135 当前文件夹下共有后缀名为【.mesh】的文件1个
136 当前文件夹下共有后缀名为【.mgraph】的文件1个
137 当前文件夹下共有后缀名为【.ans】的文件1个
138 当前文件夹下共有后缀名为【.bas】的文件1个
139 当前文件夹下共有后缀名为【.sim】的文件1个
140 当前文件夹下共有后缀名为【.cua】的文件1个
141 当前文件夹下共有后缀名为【.psa】的文件1个
142 当前文件夹下共有后缀名为【.umf4】的文件1个
143 当前文件夹下共有后缀名为【.inc】的文件1个
144 当前文件夹下共有后缀名为【.dvi】的文件1个
145 当前文件夹下共有后缀名为【.tex】的文件1个
146 当前文件夹下共有后缀名为【.ps】的文件1个
147 当前文件夹下共有后缀名为【.Po】的文件1个
148 当前文件夹下共有后缀名为【.script】的文件1个
149 当前文件夹下共有后缀名为【.pc】的文件1个
150 当前文件夹下共有后缀名为【.text】的文件1个
151 当前文件夹下共有后缀名为【.global】的文件1个
152 当前文件夹下共有后缀名为【.nc】的文件1个
153 当前文件夹下共有后缀名为【.checkL】的文件1个
154 当前文件夹下共有后缀名为【.checkB】的文件1个

155   当前文件夹下共有后缀名为【.pairs】的文件1个

1.2   统计源码总行数

统计所有源码文件的代码行数

```
1 │ find ./ -regex ".*\.hpp\|.*\.h\|.*\.cpp" | xargs wc -
  │ l
```

统计结果:

```
1 │ 2582464 total
```

1.3   统计不符合要求的总行数

对文件后缀名为 `cpp`, `hpp`, `h`, 的所有文件进行格式

```
 1 │ Artistic Style 3.1
   │ 09/02/2022
 2 │ Project option file  /home/season/elmerfem-
   │ scc20_kml/config/elmer.astylerc
 3 │ -----------------------------------------------------
   │ --------
 4 │ Directory  ./*.cpp,*.h,*.hpp
 5 │ -----------------------------------------------------
   │ --------
 6 │ Formatted
   │ ElmerGUI/Application/cad/cadpreferences.cpp
 7 │ Formatted  ElmerGUI/Application/cad/cadpreferences.h
 8 │ Formatted  ElmerGUI/Application/cad/cadview.cpp
 9 │ Formatted  ElmerGUI/Application/cad/cadview.h
10 │ Formatted
   │ ElmerGUI/Application/plugins/egconvert.cpp
11 │ Formatted  ElmerGUI/Application/plugins/egconvert.h
12 │ Formatted  ElmerGUI/Application/plugins/egdef.h
13 │ Formatted  ElmerGUI/Application/plugins/egmain.cpp
14 │ Formatted  ElmerGUI/Application/plugins/egmain.h
15 │ Formatted  ElmerGUI/Application/plugins/egmesh.cpp
16 │ Formatted  ElmerGUI/Application/plugins/egmesh.h
17 │ Formatted  ElmerGUI/Application/plugins/egnative.cpp
18 │ Formatted  ElmerGUI/Application/plugins/egnative.h
19 │ Formatted  ElmerGUI/Application/plugins/egtypes.h
20 │ Formatted  ElmerGUI/Application/plugins/egutils.cpp
21 │ Formatted  ElmerGUI/Application/plugins/egutils.h
```

22	Formatted ElmerGUI/Application/plugins/elmergrid_api.cpp
23	Formatted ElmerGUI/Application/plugins/elmergrid_api.h
24	Formatted ElmerGUI/Application/plugins/nglib_api.cpp
25	Formatted ElmerGUI/Application/plugins/nglib_api.h
26	Formatted ElmerGUI/Application/plugins/tetgen.h
27	Formatted ElmerGUI/Application/plugins/tetlib_api.cpp
28	Formatted ElmerGUI/Application/plugins/tetlib_api.h
29	Formatted ElmerGUI/Application/src/bodypropertyeditor.cpp
30	Formatted ElmerGUI/Application/src/bodypropertyeditor.h
31	Formatted ElmerGUI/Application/src/boundarydivision.cpp
32	Formatted ElmerGUI/Application/src/boundarydivision.h
33	Formatted ElmerGUI/Application/src/boundarypropertyeditor.cpp
34	Formatted ElmerGUI/Application/src/boundarypropertyeditor.h
35	Formatted ElmerGUI/Application/src/checkmpi.cpp
36	Formatted ElmerGUI/Application/src/checkmpi.h
37	Formatted ElmerGUI/Application/src/convergenceview.cpp
38	Formatted ElmerGUI/Application/src/convergenceview.h
39	Formatted ElmerGUI/Application/src/dynamiceditor.cpp
40	Formatted ElmerGUI/Application/src/dynamiceditor.h
41	Formatted ElmerGUI/Application/src/edfeditor.cpp
42	Formatted ElmerGUI/Application/src/edfeditor.h
43	Formatted ElmerGUI/Application/src/egini.cpp
44	Formatted ElmerGUI/Application/src/egini.h
45	Formatted ElmerGUI/Application/src/generalsetup.cpp
46	Formatted ElmerGUI/Application/src/generalsetup.h
47	Formatted ElmerGUI/Application/src/glcontrol.cpp
48	Formatted ElmerGUI/Application/src/glcontrol.h
49	Formatted ElmerGUI/Application/src/glwidget.cpp
50	Formatted ElmerGUI/Application/src/glwidget.h
51	Formatted ElmerGUI/Application/src/helpers.cpp
52	Formatted ElmerGUI/Application/src/helpers.h
53	Formatted ElmerGUI/Application/src/main.cpp
54	Formatted ElmerGUI/Application/src/mainwindow.cpp
55	Formatted ElmerGUI/Application/src/mainwindow.h

56	Formatted ElmerGUI/Application/src/materiallibrary.cpp
57	Formatted ElmerGUI/Application/src/materiallibrary.h
58	Formatted ElmerGUI/Application/src/maxlimits.cpp
59	Formatted ElmerGUI/Application/src/maxlimits.h
60	Formatted ElmerGUI/Application/src/meshcontrol.cpp
61	Formatted ElmerGUI/Application/src/meshcontrol.h
62	Formatted ElmerGUI/Application/src/meshingthread.cpp
63	Formatted ElmerGUI/Application/src/meshingthread.h
64	Formatted ElmerGUI/Application/src/meshtype.cpp
65	Formatted ElmerGUI/Application/src/meshtype.h
66	Formatted ElmerGUI/Application/src/meshutils.cpp
67	Formatted ElmerGUI/Application/src/meshutils.h
68	Formatted ElmerGUI/Application/src/newprojectdialog.cpp
69	Formatted ElmerGUI/Application/src/newprojectdialog.h
70	Formatted ElmerGUI/Application/src/objectbrowser.cpp
71	Formatted ElmerGUI/Application/src/objectbrowser.h
72	Formatted ElmerGUI/Application/src/operation.cpp
73	Formatted ElmerGUI/Application/src/operation.h
74	Formatted ElmerGUI/Application/src/parallel.cpp
75	Formatted ElmerGUI/Application/src/parallel.h
76	Formatted ElmerGUI/Application/src/projectio.cpp
77	Formatted ElmerGUI/Application/src/projectio.h
78	Formatted ElmerGUI/Application/src/sifgenerator.cpp
79	Formatted ElmerGUI/Application/src/sifgenerator.h
80	Formatted ElmerGUI/Application/src/sifwindow.cpp
81	Formatted ElmerGUI/Application/src/sifwindow.h
82	Formatted ElmerGUI/Application/src/solverlogwindow.cpp
83	Formatted ElmerGUI/Application/src/solverlogwindow.h
84	Formatted ElmerGUI/Application/src/solverparameters.cpp
85	Formatted ElmerGUI/Application/src/solverparameters.h
86	Formatted ElmerGUI/Application/src/summaryeditor.cpp
87	Formatted ElmerGUI/Application/src/summaryeditor.h
88	Formatted ElmerGUI/Application/twod/curveeditor.cpp
89	Formatted ElmerGUI/Application/twod/curveeditor.h
90	Formatted ElmerGUI/Application/twod/renderarea.cpp
91	Formatted ElmerGUI/Application/twod/renderarea.h

92	Formatted	ElmerGUI/Application/twod/twodview.cpp
93	Formatted	ElmerGUI/Application/twod/twodview.h
94	Formatted	ElmerGUI/Application/vtkpost/axes.cpp
95	Formatted	ElmerGUI/Application/vtkpost/axes.h
96	Formatted	ElmerGUI/Application/vtkpost/colorbar.cpp
97	Formatted	ElmerGUI/Application/vtkpost/colorbar.h
98	Formatted	ElmerGUI/Application/vtkpost/ecmaconsole.cpp
99	Formatted	ElmerGUI/Application/vtkpost/ecmaconsole.h
100	Formatted	ElmerGUI/Application/vtkpost/epmesh.cpp
101	Formatted	ElmerGUI/Application/vtkpost/epmesh.h
102	Formatted	ElmerGUI/Application/vtkpost/featureedge.cpp
103	Formatted	ElmerGUI/Application/vtkpost/featureedge.h
104	Formatted	ElmerGUI/Application/vtkpost/isocontour.cpp
105	Formatted	ElmerGUI/Application/vtkpost/isocontour.h
106	Formatted	ElmerGUI/Application/vtkpost/isosurface.cpp
107	Formatted	ElmerGUI/Application/vtkpost/isosurface.h
108	Formatted	ElmerGUI/Application/vtkpost/matc.cpp
109	Formatted	ElmerGUI/Application/vtkpost/matc.h
110	Formatted	ElmerGUI/Application/vtkpost/mc.h
111	Formatted	ElmerGUI/Application/vtkpost/meshedge.cpp
112	Formatted	ElmerGUI/Application/vtkpost/meshedge.h
113	Formatted	ElmerGUI/Application/vtkpost/meshpoint.cpp
114	Formatted	ElmerGUI/Application/vtkpost/meshpoint.h
115	Formatted	ElmerGUI/Application/vtkpost/preferences.cpp
116	Formatted	ElmerGUI/Application/vtkpost/preferences.h
117	Formatted	ElmerGUI/Application/vtkpost/readepfile.cpp
118	Formatted	ElmerGUI/Application/vtkpost/readepfile.h
119	Formatted	ElmerGUI/Application/vtkpost/streamline.cpp
120	Formatted	ElmerGUI/Application/vtkpost/streamline.h
121	Formatted	ElmerGUI/Application/vtkpost/surface.cpp
122	Formatted	ElmerGUI/Application/vtkpost/surface.h
123	Formatted	ElmerGUI/Application/vtkpost/text.cpp
124	Formatted	ElmerGUI/Application/vtkpost/text.h
125	Formatted	ElmerGUI/Application/vtkpost/timestep.cpp
126	Formatted	ElmerGUI/Application/vtkpost/timestep.h
127	Formatted	ElmerGUI/Application/vtkpost/vector.cpp

128	Formatted	ElmerGUI/Application/vtkpost/vector.h
129	Formatted	ElmerGUI/Application/vtkpost/vtkpost.cpp
130	Formatted	ElmerGUI/Application/vtkpost/vtkpost.h
131	Formatted	ElmerGUI/PythonQt/src/PythonQt.cpp
132	Formatted	ElmerGUI/PythonQt/src/PythonQt.h
133	Formatted	ElmerGUI/PythonQt/src/PythonQtClassInfo.cpp
134	Formatted	ElmerGUI/PythonQt/src/PythonQtClassInfo.h
135	Formatted	ElmerGUI/PythonQt/src/PythonQtConversion.cpp
136	Formatted	ElmerGUI/PythonQt/src/PythonQtConversion.h
137	Formatted	ElmerGUI/PythonQt/src/PythonQtCppWrapperFactory.h
138	Formatted	ElmerGUI/PythonQt/src/PythonQtDoc.h
139	Formatted	ElmerGUI/PythonQt/src/PythonQtImportFileInterface.h
140	Formatted	ElmerGUI/PythonQt/src/PythonQtImporter.cpp
141	Formatted	ElmerGUI/PythonQt/src/PythonQtImporter.h
142	Formatted	ElmerGUI/PythonQt/src/PythonQtMetaObjectWrapper.cpp
143	Formatted	ElmerGUI/PythonQt/src/PythonQtMetaObjectWrapper.h
144	Formatted	ElmerGUI/PythonQt/src/PythonQtMethodInfo.cpp
145	Formatted	ElmerGUI/PythonQt/src/PythonQtMethodInfo.h
146	Formatted	ElmerGUI/PythonQt/src/PythonQtMisc.cpp
147	Formatted	ElmerGUI/PythonQt/src/PythonQtMisc.h
148	Formatted	ElmerGUI/PythonQt/src/PythonQtObjectPtr.cpp
149	Formatted	ElmerGUI/PythonQt/src/PythonQtObjectPtr.h
150	Formatted	ElmerGUI/PythonQt/src/PythonQtSignalReceiver.cpp
151	Formatted	ElmerGUI/PythonQt/src/PythonQtSignalReceiver.h
152	Formatted	ElmerGUI/PythonQt/src/PythonQtSlot.cpp
153	Formatted	ElmerGUI/PythonQt/src/PythonQtSlot.h
154	Formatted	ElmerGUI/PythonQt/src/PythonQtStdDecorators.cpp
155	Formatted	ElmerGUI/PythonQt/src/PythonQtStdDecorators.h
156	Formatted	ElmerGUI/PythonQt/src/PythonQtStdOut.cpp
157	Formatted	ElmerGUI/PythonQt/src/PythonQtStdOut.h
158	Formatted	ElmerGUI/PythonQt/src/PythonQtSystem.h

159	Formatted ElmerGUI/PythonQt/src/PythonQtVariantWrapper.cpp
160	Formatted ElmerGUI/PythonQt/src/PythonQtVariantWrapper.h
161	Formatted ElmerGUI/PythonQt/src/PythonQtVariants.cpp
162	Formatted ElmerGUI/PythonQt/src/PythonQtVariants.h
163	Formatted ElmerGUI/PythonQt/src/PythonQtWrapper.cpp
164	Formatted ElmerGUI/PythonQt/src/PythonQtWrapper.h
165	Formatted ElmerGUI/PythonQt/src/gui/PythonQtScriptingConsole.cpp
166	Formatted ElmerGUI/PythonQt/src/gui/PythonQtScriptingConsole.h
167	Formatted ElmerGUI/PythonQt/src/wrapper/PythonQtWrappedVariants.h
168	Formatted ElmerGUI/matc/config.h
169	Formatted ElmerGUI/matc/src/str.h
170	Formatted ElmerGUI/matc/src/elmer/fnames.h
171	Formatted ElmerGUI/matc/src/elmer/gra.h
172	Formatted ElmerGUI/matc/src/elmer/matc.h
173	Formatted ElmerGUI/netgen/libsrc/csg/algprim.cpp
174	Formatted ElmerGUI/netgen/libsrc/csg/algprim.hpp
175	Formatted ElmerGUI/netgen/libsrc/csg/brick.cpp
176	Formatted ElmerGUI/netgen/libsrc/csg/brick.hpp
177	Formatted ElmerGUI/netgen/libsrc/csg/bspline2d.cpp
178	Formatted ElmerGUI/netgen/libsrc/csg/csgeom.cpp
179	Formatted ElmerGUI/netgen/libsrc/csg/csgeom.hpp
180	Formatted ElmerGUI/netgen/libsrc/csg/csgparser.cpp
181	Formatted ElmerGUI/netgen/libsrc/csg/csgparser.hpp
182	Formatted ElmerGUI/netgen/libsrc/csg/curve2d.cpp
183	Formatted ElmerGUI/netgen/libsrc/csg/curve2d.hpp
184	Formatted ElmerGUI/netgen/libsrc/csg/edgeflw.cpp
185	Formatted ElmerGUI/netgen/libsrc/csg/edgeflw.hpp
186	Formatted ElmerGUI/netgen/libsrc/csg/explicitcurve2d.cpp
187	Formatted ElmerGUI/netgen/libsrc/csg/explicitcurve2d.hpp
188	Formatted ElmerGUI/netgen/libsrc/csg/extrusion.cpp
189	Formatted ElmerGUI/netgen/libsrc/csg/extrusion.hpp
190	Formatted ElmerGUI/netgen/libsrc/csg/gencyl.cpp
191	Formatted ElmerGUI/netgen/libsrc/csg/gencyl.hpp
192	Formatted ElmerGUI/netgen/libsrc/csg/genmesh.cpp
193	Formatted ElmerGUI/netgen/libsrc/csg/identify.cpp
194	Formatted ElmerGUI/netgen/libsrc/csg/identify.hpp
195	Formatted ElmerGUI/netgen/libsrc/csg/manifold.cpp

```
196  Formatted   ElmerGUI/netgen/libsrc/csg/manifold.hpp
197  Formatted   ElmerGUI/netgen/libsrc/csg/meshsurf.cpp
198  Formatted   ElmerGUI/netgen/libsrc/csg/meshsurf.hpp
199  Formatted   ElmerGUI/netgen/libsrc/csg/polyhedra.cpp
200  Formatted   ElmerGUI/netgen/libsrc/csg/polyhedra.hpp
201  Formatted   ElmerGUI/netgen/libsrc/csg/revolution.cpp
202  Formatted   ElmerGUI/netgen/libsrc/csg/revolution.hpp
203  Formatted
     ElmerGUI/netgen/libsrc/csg/singularref.cpp
204  Formatted
     ElmerGUI/netgen/libsrc/csg/singularref.hpp
205  Formatted   ElmerGUI/netgen/libsrc/csg/solid.cpp
206  Formatted   ElmerGUI/netgen/libsrc/csg/solid.hpp
207  Formatted   ElmerGUI/netgen/libsrc/csg/specpoin.cpp
208  Formatted   ElmerGUI/netgen/libsrc/csg/specpoin.hpp
209  Formatted   ElmerGUI/netgen/libsrc/csg/spline3d.cpp
210  Formatted   ElmerGUI/netgen/libsrc/csg/spline3d.hpp
211  Formatted   ElmerGUI/netgen/libsrc/csg/surface.cpp
212  Formatted   ElmerGUI/netgen/libsrc/csg/surface.hpp
213  Formatted   ElmerGUI/netgen/libsrc/csg/triapprox.cpp
214  Formatted   ElmerGUI/netgen/libsrc/csg/triapprox.hpp
215  Formatted   ElmerGUI/netgen/libsrc/general/array.cpp
216  Formatted   ElmerGUI/netgen/libsrc/general/array.hpp
217  Formatted
     ElmerGUI/netgen/libsrc/general/autodiff.hpp
218  Formatted
     ElmerGUI/netgen/libsrc/general/autoptr.hpp
219  Formatted
     ElmerGUI/netgen/libsrc/general/bitarray.cpp
220  Formatted
     ElmerGUI/netgen/libsrc/general/bitarray.hpp
221  Formatted
     ElmerGUI/netgen/libsrc/general/dynamicmem.cpp
222  Formatted
     ElmerGUI/netgen/libsrc/general/dynamicmem.hpp
223  Formatted   ElmerGUI/netgen/libsrc/general/flags.cpp
224  Formatted   ElmerGUI/netgen/libsrc/general/flags.hpp
225  Formatted
     ElmerGUI/netgen/libsrc/general/hashtabl.cpp
226  Formatted
     ElmerGUI/netgen/libsrc/general/hashtabl.hpp
227  Formatted
     ElmerGUI/netgen/libsrc/general/moveablemem.cpp
228  Formatted
     ElmerGUI/netgen/libsrc/general/moveablemem.hpp
229  Formatted   ElmerGUI/netgen/libsrc/general/myadt.hpp
```

```
230  Formatted
     ElmerGUI/netgen/libsrc/general/mystring.cpp
231  Formatted
     ElmerGUI/netgen/libsrc/general/mystring.hpp
232  Formatted
     ElmerGUI/netgen/libsrc/general/netgenout.hpp
233  Formatted
     ElmerGUI/netgen/libsrc/general/ngexception.cpp
234  Formatted
     ElmerGUI/netgen/libsrc/general/ngexception.hpp
235  Formatted   ElmerGUI/netgen/libsrc/general/optmem.cpp
236  Formatted   ElmerGUI/netgen/libsrc/general/optmem.hpp
237  Formatted
     ElmerGUI/netgen/libsrc/general/parthreads.cpp
238  Formatted
     ElmerGUI/netgen/libsrc/general/parthreads.hpp
239  Formatted
     ElmerGUI/netgen/libsrc/general/profiler.cpp
240  Formatted
     ElmerGUI/netgen/libsrc/general/profiler.hpp
241  Formatted   ElmerGUI/netgen/libsrc/general/seti.cpp
242  Formatted   ElmerGUI/netgen/libsrc/general/seti.hpp
243  Formatted   ElmerGUI/netgen/libsrc/general/sort.cpp
244  Formatted   ElmerGUI/netgen/libsrc/general/sort.hpp
245  Formatted
     ElmerGUI/netgen/libsrc/general/spbita2d.cpp
246  Formatted
     ElmerGUI/netgen/libsrc/general/spbita2d.hpp
247  Formatted   ElmerGUI/netgen/libsrc/general/stack.hpp
248  Formatted
     ElmerGUI/netgen/libsrc/general/symbolta.cpp
249  Formatted
     ElmerGUI/netgen/libsrc/general/symbolta.hpp
250  Formatted   ElmerGUI/netgen/libsrc/general/table.cpp
251  Formatted   ElmerGUI/netgen/libsrc/general/table.hpp
252  Formatted
     ElmerGUI/netgen/libsrc/general/template.hpp
253  Formatted
     ElmerGUI/netgen/libsrc/geom2d/genmesh2d.cpp
254  Formatted
     ElmerGUI/netgen/libsrc/geom2d/geom2dmesh.cpp
255  Formatted
     ElmerGUI/netgen/libsrc/geom2d/geom2dmesh.hpp
256  Formatted   ElmerGUI/netgen/libsrc/geom2d/spline.cpp
257  Formatted   ElmerGUI/netgen/libsrc/geom2d/spline.hpp
258  Formatted
     ElmerGUI/netgen/libsrc/geom2d/spline2d.cpp
```

259	Formatted	ElmerGUI/netgen/libsrc/geom2d/spline2d.hpp
260	Formatted	ElmerGUI/netgen/libsrc/geom2d/splinegeometry.cpp
261	Formatted	ElmerGUI/netgen/libsrc/geom2d/splinegeometry.hpp
262	Formatted	ElmerGUI/netgen/libsrc/geom2d/splinegeometry2.cpp
263	Formatted	ElmerGUI/netgen/libsrc/geom2d/splinegeometry2.hpp
264	Formatted	ElmerGUI/netgen/libsrc/gprim/adtree.cpp
265	Formatted	ElmerGUI/netgen/libsrc/gprim/adtree.hpp
266	Formatted	ElmerGUI/netgen/libsrc/gprim/geom2d.cpp
267	Formatted	ElmerGUI/netgen/libsrc/gprim/geom2d.hpp
268	Formatted	ElmerGUI/netgen/libsrc/gprim/geom3d.cpp
269	Formatted	ElmerGUI/netgen/libsrc/gprim/geom3d.hpp
270	Formatted	ElmerGUI/netgen/libsrc/gprim/geomfuncs.cpp
271	Formatted	ElmerGUI/netgen/libsrc/gprim/geomfuncs.hpp
272	Formatted	ElmerGUI/netgen/libsrc/gprim/geomobjects.hpp
273	Formatted	ElmerGUI/netgen/libsrc/gprim/geomops.hpp
274	Formatted	ElmerGUI/netgen/libsrc/gprim/geomtest3d.cpp
275	Formatted	ElmerGUI/netgen/libsrc/gprim/geomtest3d.hpp
276	Formatted	ElmerGUI/netgen/libsrc/gprim/transform3d.cpp
277	Formatted	ElmerGUI/netgen/libsrc/gprim/transform3d.hpp
278	Formatted	ElmerGUI/netgen/libsrc/include/FlexLexer.h
279	Formatted	ElmerGUI/netgen/libsrc/include/mystdlib.h
280	Formatted	ElmerGUI/netgen/libsrc/interface/importsolution.cpp
281	Formatted	ElmerGUI/netgen/libsrc/interface/nginterface.cpp
282	Formatted	ElmerGUI/netgen/libsrc/interface/nginterface.h
283	Formatted	ElmerGUI/netgen/libsrc/interface/nglib.cpp
284	Formatted	ElmerGUI/netgen/libsrc/interface/nglib.h
285	Formatted	ElmerGUI/netgen/libsrc/interface/readtetmesh.cpp
286	Formatted	ElmerGUI/netgen/libsrc/interface/readuser.cpp

287 Formatted ElmerGUI/netgen/libsrc/interface/writeabaqus.cpp
288 Formatted ElmerGUI/netgen/libsrc/interface/writediffpack.cpp
289 Formatted ElmerGUI/netgen/libsrc/interface/writedolfin.cpp
290 Formatted ElmerGUI/netgen/libsrc/interface/writeelmer.cpp
291 Formatted ElmerGUI/netgen/libsrc/interface/writefeap.cpp
292 Formatted ElmerGUI/netgen/libsrc/interface/writefluent.cpp
293 Formatted ElmerGUI/netgen/libsrc/interface/writegmsh.cpp
294 Formatted ElmerGUI/netgen/libsrc/interface/writejcm.cpp
295 Formatted ElmerGUI/netgen/libsrc/interface/writepermas.cpp
296 Formatted ElmerGUI/netgen/libsrc/interface/writetecplot.cpp
297 Formatted ElmerGUI/netgen/libsrc/interface/writetet.cpp
298 Formatted ElmerGUI/netgen/libsrc/interface/writetochnog.cpp
299 Formatted ElmerGUI/netgen/libsrc/interface/writeuser.cpp
300 Formatted ElmerGUI/netgen/libsrc/interface/writeuser.hpp
301 Formatted ElmerGUI/netgen/libsrc/interface/wuchemnitz.cpp
302 Formatted ElmerGUI/netgen/libsrc/linalg/densemat.cpp
303 Formatted ElmerGUI/netgen/libsrc/linalg/densemat.hpp
304 Formatted ElmerGUI/netgen/libsrc/linalg/linalg.hpp
305 Formatted ElmerGUI/netgen/libsrc/linalg/polynomial.cpp
306 Formatted ElmerGUI/netgen/libsrc/linalg/polynomial.hpp
307 Formatted ElmerGUI/netgen/libsrc/linalg/vector.cpp
308 Formatted ElmerGUI/netgen/libsrc/linalg/vector.hpp
309 Formatted ElmerGUI/netgen/libsrc/meshing/adfront2.cpp
310 Formatted ElmerGUI/netgen/libsrc/meshing/adfront2.hpp
311 Formatted ElmerGUI/netgen/libsrc/meshing/adfront3.cpp

```
312  Formatted
     ElmerGUI/netgen/libsrc/meshing/adfront3.hpp
313  Formatted   ElmerGUI/netgen/libsrc/meshing/bisect.cpp
314  Formatted   ElmerGUI/netgen/libsrc/meshing/bisect.hpp
315  Formatted
     ElmerGUI/netgen/libsrc/meshing/boundarylayer.cpp
316  Formatted
     ElmerGUI/netgen/libsrc/meshing/classifyhpel.hpp
317  Formatted
     ElmerGUI/netgen/libsrc/meshing/clusters.cpp
318  Formatted
     ElmerGUI/netgen/libsrc/meshing/clusters.hpp
319  Formatted
     ElmerGUI/netgen/libsrc/meshing/curvedelems.cpp
320  Formatted
     ElmerGUI/netgen/libsrc/meshing/curvedelems.hpp
321  Formatted
     ElmerGUI/netgen/libsrc/meshing/curvedelems2.cpp
322  Formatted
     ElmerGUI/netgen/libsrc/meshing/curvedelems_new.cpp
323  Formatted
     ElmerGUI/netgen/libsrc/meshing/curvedelems_new.hpp
324  Formatted
     ElmerGUI/netgen/libsrc/meshing/delaunay.cpp
325  Formatted   ElmerGUI/netgen/libsrc/meshing/findip.cpp
326  Formatted   ElmerGUI/netgen/libsrc/meshing/findip.hpp
327  Formatted
     ElmerGUI/netgen/libsrc/meshing/findip2.hpp
328  Formatted
     ElmerGUI/netgen/libsrc/meshing/geomsearch.cpp
329  Formatted
     ElmerGUI/netgen/libsrc/meshing/geomsearch.hpp
330  Formatted   ElmerGUI/netgen/libsrc/meshing/global.cpp
331  Formatted   ElmerGUI/netgen/libsrc/meshing/global.hpp
332  Formatted
     ElmerGUI/netgen/libsrc/meshing/hpref_hex.hpp
333  Formatted
     ElmerGUI/netgen/libsrc/meshing/hpref_prism.hpp
334  Formatted
     ElmerGUI/netgen/libsrc/meshing/hpref_pyramid.hpp
335  Formatted
     ElmerGUI/netgen/libsrc/meshing/hpref_quad.hpp
336  Formatted
     ElmerGUI/netgen/libsrc/meshing/hpref_segm.hpp
337  Formatted
     ElmerGUI/netgen/libsrc/meshing/hpref_tet.hpp
```

338   Formatted ElmerGUI/netgen/libsrc/meshing/hpref_trig.hpp
339   Formatted ElmerGUI/netgen/libsrc/meshing/hprefinement.cpp
340   Formatted ElmerGUI/netgen/libsrc/meshing/hprefinement.hpp
341   Formatted ElmerGUI/netgen/libsrc/meshing/improve2.cpp
342   Formatted ElmerGUI/netgen/libsrc/meshing/improve2.hpp
343   Formatted ElmerGUI/netgen/libsrc/meshing/improve2gen.cpp
344   Formatted ElmerGUI/netgen/libsrc/meshing/improve3.cpp
345   Formatted ElmerGUI/netgen/libsrc/meshing/improve3.hpp
346   Formatted   ElmerGUI/netgen/libsrc/meshing/localh.cpp
347   Formatted   ElmerGUI/netgen/libsrc/meshing/localh.hpp
348   Formatted ElmerGUI/netgen/libsrc/meshing/meshclass.cpp
349   Formatted ElmerGUI/netgen/libsrc/meshing/meshclass.hpp
350   Formatted ElmerGUI/netgen/libsrc/meshing/meshfunc.cpp
351   Formatted ElmerGUI/netgen/libsrc/meshing/meshfunc.hpp
352   Formatted ElmerGUI/netgen/libsrc/meshing/meshfunc2d.cpp
353   Formatted ElmerGUI/netgen/libsrc/meshing/meshing.hpp
354   Formatted ElmerGUI/netgen/libsrc/meshing/meshing2.cpp
355   Formatted ElmerGUI/netgen/libsrc/meshing/meshing2.hpp
356   Formatted ElmerGUI/netgen/libsrc/meshing/meshing3.cpp
357   Formatted ElmerGUI/netgen/libsrc/meshing/meshing3.hpp
358   Formatted ElmerGUI/netgen/libsrc/meshing/meshtool.cpp
359   Formatted ElmerGUI/netgen/libsrc/meshing/meshtool.hpp
360   Formatted ElmerGUI/netgen/libsrc/meshing/meshtype.cpp
361   Formatted ElmerGUI/netgen/libsrc/meshing/meshtype.hpp

362   Formatted ElmerGUI/netgen/libsrc/meshing/msghandler.cpp

363   Formatted ElmerGUI/netgen/libsrc/meshing/msghandler.hpp

364   Formatted ElmerGUI/netgen/libsrc/meshing/netrule2.cpp

365   Formatted ElmerGUI/netgen/libsrc/meshing/netrule3.cpp

366   Formatted ElmerGUI/netgen/libsrc/meshing/parser2.cpp

367   Formatted ElmerGUI/netgen/libsrc/meshing/parser3.cpp

368   Formatted ElmerGUI/netgen/libsrc/meshing/prism2rls.cpp

369   Formatted ElmerGUI/netgen/libsrc/meshing/pyramid2rls.cpp

370   Formatted ElmerGUI/netgen/libsrc/meshing/pyramidrls.cpp

371   Formatted ElmerGUI/netgen/libsrc/meshing/quadrls.cpp

372   Formatted   ElmerGUI/netgen/libsrc/meshing/refine.cpp

373   Formatted   ElmerGUI/netgen/libsrc/meshing/ruler2.cpp

374   Formatted   ElmerGUI/netgen/libsrc/meshing/ruler2.hpp

375   Formatted   ElmerGUI/netgen/libsrc/meshing/ruler3.cpp

376   Formatted   ElmerGUI/netgen/libsrc/meshing/ruler3.hpp

377   Formatted ElmerGUI/netgen/libsrc/meshing/secondorder.cpp

378   Formatted ElmerGUI/netgen/libsrc/meshing/smoothing2.5.cpp

379   Formatted ElmerGUI/netgen/libsrc/meshing/smoothing2.cpp

380   Formatted ElmerGUI/netgen/libsrc/meshing/smoothing3.cpp

381   Formatted ElmerGUI/netgen/libsrc/meshing/specials.cpp

382   Formatted ElmerGUI/netgen/libsrc/meshing/specials.hpp

383   Formatted ElmerGUI/netgen/libsrc/meshing/tetrarls.cpp

384   Formatted ElmerGUI/netgen/libsrc/meshing/topology.cpp

385   Formatted ElmerGUI/netgen/libsrc/meshing/topology.hpp

386   Formatted ElmerGUI/netgen/libsrc/meshing/triarls.cpp

387   Formatted ElmerGUI/netgen/libsrc/meshing/validate.cpp

388	Formatted	ElmerGUI/netgen/libsrc/meshing/validate.hpp
389	Formatted	ElmerGUI/netgen/libsrc/meshing/zrefine.cpp
390	Formatted	ElmerGUI/netgen/libsrc/opti/bfgs.cpp
391	Formatted	ElmerGUI/netgen/libsrc/opti/linopt.cpp
392	Formatted	ElmerGUI/netgen/libsrc/opti/linsearch.cpp
393	Formatted	ElmerGUI/netgen/libsrc/opti/opti.hpp
394	Formatted	ElmerGUI/netgen/libsrc/stlgeom/meshstlsurface.cpp
395	Formatted	ElmerGUI/netgen/libsrc/stlgeom/meshstlsurface.hpp
396	Formatted	ElmerGUI/netgen/libsrc/stlgeom/stlgeom.cpp
397	Formatted	ElmerGUI/netgen/libsrc/stlgeom/stlgeom.hpp
398	Formatted	ElmerGUI/netgen/libsrc/stlgeom/stlgeomchart.cpp
399	Formatted	ElmerGUI/netgen/libsrc/stlgeom/stlgeommesh.cpp
400	Formatted	ElmerGUI/netgen/libsrc/stlgeom/stlline.cpp
401	Formatted	ElmerGUI/netgen/libsrc/stlgeom/stlline.hpp
402	Formatted	ElmerGUI/netgen/libsrc/stlgeom/stltool.cpp
403	Formatted	ElmerGUI/netgen/libsrc/stlgeom/stltool.hpp
404	Formatted	ElmerGUI/netgen/libsrc/stlgeom/stltopology.cpp
405	Formatted	ElmerGUI/netgen/libsrc/stlgeom/stltopology.hpp
406	Formatted	ElmerGUIlogger/src/main.cpp
407	Formatted	ElmerGUIlogger/src/mainwindow.cpp
408	Formatted	ElmerGUIlogger/src/mainwindow.h
409	Formatted	ElmerGUItester/src/main.cpp
410	Formatted	ElmerGUItester/src/tester.cpp
411	Formatted	ElmerGUItester/src/tester.h
412	Formatted	build/CMakeFiles/3.22.0/CompilerIdCXX/CMakeCXXCompilerId.cpp
413	Formatted	build/fem/config.h
414	Formatted	contrib/lua-5.1.5/src/lauxlib.h
415	Formatted	contrib/lua-5.1.5/src/lcode.h
416	Formatted	contrib/lua-5.1.5/src/ldebug.h
417	Formatted	contrib/lua-5.1.5/src/ldo.h
418	Formatted	contrib/lua-5.1.5/src/lfunc.h

```
419  Formatted   contrib/lua-5.1.5/src/lgc.h
420  Formatted   contrib/lua-5.1.5/src/llex.h
421  Formatted   contrib/lua-5.1.5/src/llimits.h
422  Formatted   contrib/lua-5.1.5/src/lmem.h
423  Formatted   contrib/lua-5.1.5/src/lobject.h
424  Formatted   contrib/lua-5.1.5/src/lopcodes.h
425  Formatted   contrib/lua-5.1.5/src/lparser.h
426  Formatted   contrib/lua-5.1.5/src/lstate.h
427  Formatted   contrib/lua-5.1.5/src/lstring.h
428  Formatted   contrib/lua-5.1.5/src/ltable.h
429  Formatted   contrib/lua-5.1.5/src/ltm.h
430  Formatted   contrib/lua-5.1.5/src/lua.h
431  Formatted   contrib/lua-5.1.5/src/luaconf.h
432  Formatted   contrib/lua-5.1.5/src/lualib.h
433  Formatted   contrib/lua-5.1.5/src/lundump.h
434  Formatted   contrib/lua-5.1.5/src/lvm.h
435  Formatted   contrib/lua-5.1.5/src/lzio.h
436  Formatted   elmergrid/src/common.h
437  Formatted   elmergrid/src/femdef.h
438  Formatted   elmergrid/src/femelmer.h
439  Formatted   elmergrid/src/femfilein.h
440  Formatted   elmergrid/src/femfileout.h
441  Formatted   elmergrid/src/feminfo.h
442  Formatted   elmergrid/src/femknot.h
443  Formatted   elmergrid/src/femmesh.h
444  Formatted   elmergrid/src/femtypes.h
445  Formatted   elmergrid/src/nrutil.h
446  Formatted   elmergrid/src/metis-5.1.0/GKlib/GKlib.h
447  Formatted   elmergrid/src/metis-5.1.0/GKlib/gk_arch.h
448  Formatted   elmergrid/src/metis-
     5.1.0/GKlib/gk_getopt.h
449  Formatted   elmergrid/src/metis-
     5.1.0/GKlib/gk_macros.h
450  Formatted   elmergrid/src/metis-
     5.1.0/GKlib/gk_mkrandom.h
451  Formatted   elmergrid/src/metis-
     5.1.0/GKlib/gk_mksort.h
452  Formatted   elmergrid/src/metis-
     5.1.0/GKlib/gk_mkutils.h
453  Formatted   elmergrid/src/metis-
     5.1.0/GKlib/gk_proto.h
454  Formatted   elmergrid/src/metis-
     5.1.0/GKlib/gk_struct.h
455  Formatted   elmergrid/src/metis-
     5.1.0/GKlib/gk_types.h
456  Formatted   elmergrid/src/metis-5.1.0/GKlib/gkregex.h
```

```
457  Formatted   elmergrid/src/metis-
     5.1.0/GKlib/ms_inttypes.h
458  Formatted   elmergrid/src/metis-5.1.0/GKlib/ms_stat.h
459  Formatted   elmergrid/src/metis-
     5.1.0/GKlib/ms_stdint.h
460  Formatted   elmergrid/src/metis-5.1.0/include/metis.h
461  Formatted   elmergrid/src/metis-5.1.0/libmetis/defs.h
462  Formatted   elmergrid/src/metis-
     5.1.0/libmetis/gklib_defs.h
463  Formatted   elmergrid/src/metis-
     5.1.0/libmetis/macros.h
464  Formatted   elmergrid/src/metis-
     5.1.0/libmetis/metislib.h
465  Formatted   elmergrid/src/metis-
     5.1.0/libmetis/proto.h
466  Formatted   elmergrid/src/metis-
     5.1.0/libmetis/rename.h
467  Formatted   elmergrid/src/metis-
     5.1.0/libmetis/struct.h
468  Formatted   elmergrid/src/metis-
     5.1.0/programs/metisbin.h
469  Formatted   elmergrid/src/metis-
     5.1.0/programs/proto.h
470  Formatted   elmergrid/src/metis-
     5.1.0/programs/struct.h
471  Formatted   fem/src/elmer_lua_iface.h
472  Formatted   fem/src/mpif_stub.h
473  Formatted   fem/src/view3d/ViewFactors.h
474  Formatted   fem/src/viewaxis/viewfact.cpp
475  Formatted   fem/src/viewaxis/viewfact.h
476  Formatted   fhutiter/include/huti_fdefs.h
477  Formatted   fhutiter/src/huti_fdefs.h
478  Formatted   matc/src/str.h
479  Formatted   matc/src/elmer/fnames.h
480  Formatted   matc/src/elmer/gra.h
481  Formatted   matc/src/elmer/matc.h
482  Formatted   mathlibs/src/arpack/debug.h
483  Formatted   mathlibs/src/arpack/stat.h
484  Formatted   mathlibs/src/arpack/version.h
485  Formatted   mathlibs/src/parpack/debug.h
486  Formatted   mathlibs/src/parpack/mpif_stub.h
487  Formatted   mathlibs/src/parpack/stat.h
488  Formatted   meshgen2d/src/BGGridMesh.cpp
489  Formatted   meshgen2d/src/BGTriangleMesh.cpp
490  Formatted   meshgen2d/src/BGVertex.cpp
491  Formatted   meshgen2d/src/BoundaryElement.cpp
492  Formatted   meshgen2d/src/BoundaryLayer.cpp
```

```
493  Formatted   meshgen2d/src/Connect.cpp
494  Formatted   meshgen2d/src/Element.cpp
495  Formatted   meshgen2d/src/GeometryEdge.cpp
496  Formatted   meshgen2d/src/Mesh.cpp
497  Formatted   meshgen2d/src/MeshNode.cpp
498  Formatted   meshgen2d/src/MeshParser.cpp
499  Formatted   meshgen2d/src/Node.cpp
500  Formatted   meshgen2d/src/PQ.cpp
501  Formatted   meshgen2d/src/QuadElement.cpp
502  Formatted   meshgen2d/src/QuadLayer.cpp
503  Formatted   meshgen2d/src/SSMFVoronoiSegment.cpp
504  Formatted   meshgen2d/src/SSSFVoronoiSegment.cpp
505  Formatted   meshgen2d/src/TriangleElement.cpp
506  Formatted   meshgen2d/src/TriangleNELayer.cpp
507  Formatted   meshgen2d/src/VSVertex.cpp
508  Formatted   meshgen2d/src/Vertex.cpp
509  Formatted   meshgen2d/src/VoronoiSegment.cpp
510  Formatted   meshgen2d/src/VoronoiVertex.cpp
511  Formatted   meshgen2d/src/main.cpp
512  Formatted   meshgen2d/src/include/BGMesh.h
513  Formatted   meshgen2d/src/include/BGVertex.h
514  Formatted   meshgen2d/src/include/Body.h
515  Formatted   meshgen2d/src/include/Border.h
516  Formatted   meshgen2d/src/include/BoundaryElement.h
517  Formatted   meshgen2d/src/include/BoundaryLayer.h
518  Formatted   meshgen2d/src/include/Connect.h
519  Formatted   meshgen2d/src/include/Element.h
520  Formatted   meshgen2d/src/include/GeometryEdge.h
521  Formatted   meshgen2d/src/include/GeometryNode.h
522  Formatted   meshgen2d/src/include/Layer.h
523  Formatted   meshgen2d/src/include/Loop.h
524  Formatted   meshgen2d/src/include/MGError.h
525  Formatted   meshgen2d/src/include/Mesh.h
526  Formatted   meshgen2d/src/include/MeshNode.h
527  Formatted   meshgen2d/src/include/MeshParser.h
528  Formatted   meshgen2d/src/include/Node.h
529  Formatted   meshgen2d/src/include/PQ.h
530  Formatted   meshgen2d/src/include/QuadElement.h
531  Formatted   meshgen2d/src/include/QuadLayer.h
532  Formatted   meshgen2d/src/include/SSMFVertex.h
533  Formatted
     meshgen2d/src/include/SSMFVoronoiSegment.h
534  Formatted   meshgen2d/src/include/SSSFVertex.h
535  Formatted
     meshgen2d/src/include/SSSFVoronoiSegment.h
536  Formatted   meshgen2d/src/include/SSVoronoiSegment.h
537  Formatted   meshgen2d/src/include/Tokens.h
```

538	Formatted	meshgen2d/src/include/TriangleElement.h
539	Formatted	meshgen2d/src/include/TriangleNELayer.h
540	Formatted	meshgen2d/src/include/Triple.h
541	Formatted	meshgen2d/src/include/VSVertex.h
542	Formatted	meshgen2d/src/include/Vertex.h
543	Formatted	meshgen2d/src/include/VoronoiSegment.h
544	Formatted	meshgen2d/src/include/VoronoiVertex.h
545	Formatted	meshgen2d/src/include/coreGeometry.h
546	Formatted	meshgen2d/src/include/minmaxpatch.h
547	Formatted	misc/brepsamples/crossed_fibers.cpp
548	Formatted	misc/brepsamples/cylinder.cpp
549	Formatted	misc/brepsamples/filleted_cube.cpp
550	Formatted	misc/brepsamples/occheaders.h
551	Formatted	misc/brepsamples/spheres_in_cylinder.cpp
552	Formatted	misc/tetgen_plugin/plugin/ElmerAPI.cpp
553	Formatted	misc/tetgen_plugin/plugin/tetgen.h
554	Formatted	misc/tetgen_plugin/testapp/main.cpp
555	Formatted	post/matc/config.h
556	Formatted	post/matc/src/str.h
557	Formatted	post/matc/src/elmer/fnames.h
558	Formatted	post/matc/src/elmer/gra.h
559	Formatted	post/matc/src/elmer/matc.h
560	Formatted	post/src/elmerpost.h
561	Formatted	post/src/fttext.cpp
562	Formatted	post/src/geometry.h
563	Formatted	post/src/camera/camera.h
564	Formatted	post/src/camera/glp.h
565	Formatted	post/src/camera/glpfile.h
566	Formatted	post/src/elements/elements.h
567	Formatted	post/src/glaux/3d.h
568	Formatted	post/src/glaux/glaux.h
569	Formatted	post/src/glaux_mingw/src/3d.h
570	Formatted	post/src/glaux_mingw/src/teapot.h
571	Formatted	post/src/glaux_mingw/src/tk.h
572	Formatted	post/src/glaux_mingw/src/GL/glaux.h
573	Formatted	post/src/graphics/graphics.h
574	Formatted	post/src/include/glaux.h
575	Formatted	post/src/include/gltk.h
576	Formatted	post/src/objects/objects.h
577	Formatted	post/src/sico2elmer/sico2elmer.h
578	Formatted	post/src/tk/private.h
579	Formatted	post/src/tk/tk.h
580	Formatted	post/src/visuals/visual.h
581	Formatted	umfpack/src/amd/amd_internal.h
582	Formatted	umfpack/src/amd/include/amd.h
583	Formatted	umfpack/src/umfpack/include/umf_2by2.h
584	Formatted	umfpack/src/umfpack/include/umf_analyze.h

```
585  Formatted
     umfpack/src/umfpack/include/umf_apply_order.h
586  Formatted
     umfpack/src/umfpack/include/umf_assemble.h
587  Formatted
     umfpack/src/umfpack/include/umf_blas3_update.h
588  Formatted
     umfpack/src/umfpack/include/umf_build_tuples.h
589  Formatted  umfpack/src/umfpack/include/umf_colamd.h
590  Formatted  umfpack/src/umfpack/include/umf_config.h
591  Formatted
     umfpack/src/umfpack/include/umf_create_element.h
592  Formatted  umfpack/src/umfpack/include/umf_dump.h
593  Formatted
     umfpack/src/umfpack/include/umf_extend_front.h
594  Formatted  umfpack/src/umfpack/include/umf_free.h
595  Formatted  umfpack/src/umfpack/include/umf_fsize.h
596  Formatted
     umfpack/src/umfpack/include/umf_garbage_collection.h
597  Formatted
     umfpack/src/umfpack/include/umf_get_memory.h
598  Formatted
     umfpack/src/umfpack/include/umf_grow_front.h
599  Formatted
     umfpack/src/umfpack/include/umf_init_front.h
600  Formatted
     umfpack/src/umfpack/include/umf_internal.h
601  Formatted
     umfpack/src/umfpack/include/umf_is_permutation.h
602  Formatted  umfpack/src/umfpack/include/umf_kernel.h
603  Formatted
     umfpack/src/umfpack/include/umf_kernel_init.h
604  Formatted
     umfpack/src/umfpack/include/umf_kernel_wrapup.h
605  Formatted
     umfpack/src/umfpack/include/umf_local_search.h
606  Formatted  umfpack/src/umfpack/include/umf_lsolve.h
607  Formatted  umfpack/src/umfpack/include/umf_ltsolve.h
608  Formatted  umfpack/src/umfpack/include/umf_malloc.h
609  Formatted
     umfpack/src/umfpack/include/umf_mem_alloc_element.h
610  Formatted
     umfpack/src/umfpack/include/umf_mem_alloc_head_block
     .h
611  Formatted
     umfpack/src/umfpack/include/umf_mem_alloc_tail_block
     .h
```

612 Formatted umfpack/src/umfpack/include/umf_mem_free_tail_block.h
613 Formatted umfpack/src/umfpack/include/umf_mem_init_memoryspace.h
614 Formatted umfpack/src/umfpack/include/umf_realloc.h
615 Formatted umfpack/src/umfpack/include/umf_report_perm.h
616 Formatted umfpack/src/umfpack/include/umf_report_vector.h
617 Formatted umfpack/src/umfpack/include/umf_row_search.h
618 Formatted umfpack/src/umfpack/include/umf_scale.h
619 Formatted umfpack/src/umfpack/include/umf_scale_column.h
620 Formatted umfpack/src/umfpack/include/umf_set_stats.h
621 Formatted umfpack/src/umfpack/include/umf_singletons.h
622 Formatted umfpack/src/umfpack/include/umf_solve.h
623 Formatted umfpack/src/umfpack/include/umf_start_front.h
624 Formatted umfpack/src/umfpack/include/umf_store_lu.h
625 Formatted umfpack/src/umfpack/include/umf_symbolic_usage.h
626 Formatted umfpack/src/umfpack/include/umf_transpose.h
627 Formatted umfpack/src/umfpack/include/umf_triplet.h
628 Formatted umfpack/src/umfpack/include/umf_tuple_lengths.h
629 Formatted umfpack/src/umfpack/include/umf_usolve.h
630 Formatted umfpack/src/umfpack/include/umf_utsolve.h
631 Formatted umfpack/src/umfpack/include/umf_valid_numeric.h
632 Formatted umfpack/src/umfpack/include/umf_valid_symbolic.h
633 Formatted umfpack/src/umfpack/include/umf_version.h
634 Formatted umfpack/src/umfpack/include/umfpack.h
635 Formatted umfpack/src/umfpack/include/umfpack_col_to_triplet.h
636 Formatted umfpack/src/umfpack/include/umfpack_defaults.h
637 Formatted umfpack/src/umfpack/include/umfpack_free_numeric.h

638　Formatted umfpack/src/umfpack/include/umfpack_free_symbolic.h
639　Formatted umfpack/src/umfpack/include/umfpack_get_determinant.h
640　Formatted umfpack/src/umfpack/include/umfpack_get_lunz.h
641　Formatted umfpack/src/umfpack/include/umfpack_get_numeric.h
642　Formatted umfpack/src/umfpack/include/umfpack_get_symbolic.h
643　Formatted umfpack/src/umfpack/include/umfpack_load_numeric.h
644　Formatted umfpack/src/umfpack/include/umfpack_load_symbolic.h
645　Formatted umfpack/src/umfpack/include/umfpack_numeric.h
646　Formatted umfpack/src/umfpack/include/umfpack_qsymbolic.h
647　Formatted umfpack/src/umfpack/include/umfpack_report_control.h
648　Formatted umfpack/src/umfpack/include/umfpack_report_info.h
649　Formatted umfpack/src/umfpack/include/umfpack_report_matrix.h
650　Formatted umfpack/src/umfpack/include/umfpack_report_numeric.h
651　Formatted umfpack/src/umfpack/include/umfpack_report_perm.h
652　Formatted umfpack/src/umfpack/include/umfpack_report_status.h
653　Formatted umfpack/src/umfpack/include/umfpack_report_symbolic.h
654　Formatted umfpack/src/umfpack/include/umfpack_report_triplet.h
655　Formatted umfpack/src/umfpack/include/umfpack_report_vector.h
656　Formatted umfpack/src/umfpack/include/umfpack_save_numeric.h
657　Formatted umfpack/src/umfpack/include/umfpack_save_symbolic.h
658　Formatted umfpack/src/umfpack/include/umfpack_scale.h
659　Formatted umfpack/src/umfpack/include/umfpack_solve.h

```
660   Formatted
      umfpack/src/umfpack/include/umfpack_symbolic.h
661   Formatted
      umfpack/src/umfpack/include/umfpack_tictoc.h
662   Formatted
      umfpack/src/umfpack/include/umfpack_transpose.h
663   Formatted
      umfpack/src/umfpack/include/umfpack_triplet_to_col.h
664   Formatted
      umfpack/src/umfpack/include/umfpack_wsolve.h
665   Formatted  utils/ElmerClips/src/encoder.cpp
666   Formatted  utils/ElmerClips/src/encoder.h
667   Formatted  utils/ElmerClips/src/main.cpp
668   Formatted  utils/ElmerClips/src/preview.cpp
669   Formatted  utils/ElmerClips/src/preview.h
670   Formatted  utils/ElmerClips/src/win32/inttypes.h
671   Formatted  utils/ElmerClips/src/win32/stdint.h
672   ------------------------------------------------------
      --------
673    666 formatted   41 unchanged   1.95 seconds
      266,580 lines
```

2   功能性测试

2.1   所选测试案例

将其进行 `ctest` 进行单元测试后测试结果如下:

```
1   Test project /home/season/elmerfem-scc20/build
2         Start   1: 1dtests
3     1/677 Test   #1: 1dtests
    ..........................................................
    Passed    0.33 sec
4         Start   2: 1sttime
5     2/677 Test   #2: 1sttime
    ..........................................................
    Passed    2.38 sec
6         Start   3: 2ndtime
7     3/677 Test   #3: 2ndtime
    ..........................................................
    Passed    2.41 sec
8         Start   4: AdvDiffFCT
9     4/677 Test   #4: AdvDiffFCT
    ..........................................................
    Passed    5.17 sec
10        Start   5: AdvDiffFluxes
```

```
  5/677 Test    #5: AdvDiffFluxes
...............................................
Passed     0.27 sec
        Start    6: AdvReactDB
  6/677 Test    #6: AdvReactDB
.................................................
Passed     0.30 sec
        Start    7: AdvReactDB_np6
  7/677 Test    #7: AdvReactDB_np6
.......................................***Failed
    0.03 sec
        Start    8: AdvReactDBmap
  8/677 Test    #8: AdvReactDBmap
.............................................
Passed     1.13 sec
        Start    9: AdvReactDBmap_np6
  9/677 Test    #9: AdvReactDBmap_np6
......................................***Failed
0.03 sec
        Start   10: AdvReactDG
 10/677 Test   #10: AdvReactDG
.................................................
Passed     0.33 sec
        Start   11: AdvReactDG_np6
 11/677 Test   #11: AdvReactDG_np6
.......................................***Failed
    0.03 sec
        Start   12: AdvReactDG_P
 12/677 Test   #12: AdvReactDG_P
...............................................
Passed     0.36 sec
        Start   13: AnalyticalTest
 13/677 Test   #13: AnalyticalTest
...........................................   Passed
    0.20 sec
        Start   14: AngleMetisLayer
 14/677 Test   #14: AngleMetisLayer
..........................................   Passed
    0.31 sec
        Start   15: AngleMetisLayer_np2
 15/677 Test   #15: AngleMetisLayer_np2
.....................................   Passed
0.32 sec
        Start   16: AngleMetisLayer_np3
 16/677 Test   #16: AngleMetisLayer_np3
....................................   Passed
0.40 sec
```

```
        Start  17: AngleMetisLayer_np4
 17/677 Test  #17: AngleMetisLayer_np4
...................................    Passed
0.42 sec
        Start  18: AnglePartitionLayer_np4
 18/677 Test  #18: AnglePartitionLayer_np4
..................................    Passed    0.45
sec
        Start  19: ArteryOutlet
 19/677 Test  #19: ArteryOutlet
.........................................
Passed    4.97 sec
        Start  20: BDM2D
 20/677 Test  #20: BDM2D
...........................................
  Passed    0.21 sec
        Start  21: BDM3D
 21/677 Test  #21: BDM3D
..........................................
  Passed    1.71 sec
        Start  22: Beam_3D_Cantilever
 22/677 Test  #22: Beam_3D_Cantilever
..................................    Passed
0.16 sec
        Start  23: Beam_3D_Cantilever_Orientation
 23/677 Test  #23: Beam_3D_Cantilever_Orientation
.........................    Passed    0.17 sec
        Start  24: BlockDomainsFourHeaters
 24/677 Test  #24: BlockDomainsFourHeaters
.................................    Passed    0.27
sec
        Start  25: BlockDomainsVtuParts
 25/677 Test  #25: BlockDomainsVtuParts
.................................    Passed
0.80 sec
        Start  26: BlockLinElast1
 26/677 Test  #26: BlockLinElast1
......................................    Passed
   0.37 sec
        Start  27: BlockLinElast2
 27/677 Test  #27: BlockLinElast2
......................................    Passed
   0.22 sec
        Start  28: BlockLinElast2b
 28/677 Test  #28: BlockLinElast2b
.........................................    Passed
   0.23 sec
```

```
       Start  29: BlockLinElast3
29/677 Test  #29: BlockLinElast3
.......................................   Passed
   1.41 sec
       Start  30: BlockLinElast3b
30/677 Test  #30: BlockLinElast3b
.......................................   Passed
   1.07 sec
       Start  31: BlockLinElast3c
31/677 Test  #31: BlockLinElast3c
.......................................   Passed
   1.54 sec
       Start  32: BlockLinElast3d
32/677 Test  #32: BlockLinElast3d
.......................................   Passed
   2.15 sec
       Start  33: BlockPoisson1
33/677 Test  #33: BlockPoisson1
..........................................
Passed    0.15 sec
       Start  34: BlockPoisson2
34/677 Test  #34: BlockPoisson2
..........................................
Passed    0.16 sec
       Start  35: BlockPoisson3
35/677 Test  #35: BlockPoisson3
..........................................
Passed    0.18 sec
       Start  36: BlockRotatingBCPoisson3D
36/677 Test  #36: BlockRotatingBCPoisson3D
...............................   Passed    0.67
sec
       Start  37: BoundaryFluxes
37/677 Test  #37: BoundaryFluxes
.......................................   Passed
   0.15 sec
       Start  38: BoundaryFluxes2
38/677 Test  #38: BoundaryFluxes2
.......................................   Passed
   0.15 sec
       Start  39: CapacitanceMatrix
39/677 Test  #39: CapacitanceMatrix
.....................................   Passed
0.21 sec
       Start  40: CapacitanceMatrix2
```

```
 40/677 Test  #40: CapacitanceMatrix2
.......................................        Passed
0.21 sec
        Start  41: CavityLid
 41/677 Test  #41: CavityLid
............................................
Passed    0.32 sec
        Start  42: CavityLid2
 42/677 Test  #42: CavityLid2
...........................................
Passed    1.55 sec
        Start  43: Classical2DShell
 43/677 Test  #43: Classical2DShell
......................................        Passed
0.79 sec
        Start  44: CoilSolver1
 44/677 Test  #44: CoilSolver1
.........................................
Passed    0.25 sec
        Start  45: CoilSolver1_np2
 45/677 Test  #45: CoilSolver1_np2
.......................................        Passed
   0.24 sec
        Start  46: CoilSolver1_np4
 46/677 Test  #46: CoilSolver1_np4
.......................................        Passed
   0.45 sec
        Start  47: CoilSolver2
 47/677 Test  #47: CoilSolver2
..........................................
Passed    0.21 sec
        Start  48: CoilSolver3
 48/677 Test  #48: CoilSolver3
..........................................
Passed    0.23 sec
        Start  49: CoilSolver4
 49/677 Test  #49: CoilSolver4
..........................................
Passed    0.23 sec
        Start  50: CoilSolver5
 50/677 Test  #50: CoilSolver5
..........................................
Passed    0.23 sec
        Start  51: CoilSolver6
 51/677 Test  #51: CoilSolver6
..........................................
Passed    0.22 sec
```

```
104        Start  52: CoilSolverLoop
105   52/677 Test  #52: CoilSolverLoop
      ........................................  Passed
        0.26 sec
106        Start  53: CoilSolverLoop_np2
107   53/677 Test  #53: CoilSolverLoop_np2
      ......................................  Passed
      0.24 sec
108        Start  54: CoilSolverLoop_np4
109   54/677 Test  #54: CoilSolverLoop_np4
      ......................................  Passed
      0.41 sec
110        Start  55: CoilSolverLoopNarrow
111   55/677 Test  #55: CoilSolverLoopNarrow
      ....................................  Passed
      0.29 sec
112        Start  56: CoilSolverTwoLoops
113   56/677 Test  #56: CoilSolverTwoLoops
      ......................................  Passed
      0.38 sec
114        Start  57: CoilSolverTwoLoops_np2
115   57/677 Test  #57: CoilSolverTwoLoops_np2
      ..................................  Passed    0.34
      sec
116        Start  58: CoilSolverTwoLoops_np4
117   58/677 Test  #58: CoilSolverTwoLoops_np4
      ..................................  Passed    0.46
      sec
118        Start  59: ComponentResistance
119   59/677 Test  #59: ComponentResistance
      ........................................  Passed
      0.16 sec
120        Start  60: ComponentResistance_np4
121   60/677 Test  #60: ComponentResistance_np4
      ..................................  Passed    0.34
      sec
122        Start  61: CompressIdealGas
123   61/677 Test  #61: CompressIdealGas
      ..........................................  Passed
      1.83 sec
124        Start  62: CompressIdealGas2
125   62/677 Test  #62: CompressIdealGas2
      ........................................  Passed
      0.68 sec
126        Start  63: ConformingDisplacementCube
127   63/677 Test  #63: ConformingDisplacementCube
      ...............................  Passed    1.19 sec
```

```
        Start  64: ConstantBCDisplacement
 64/677 Test  #64: ConstantBCDisplacement
.................................... Passed    1.49
sec
        Start  65: ConstantBCTemperature
 65/677 Test  #65: ConstantBCTemperature
.................................... Passed
0.16 sec
        Start  66: ContactBlunt2D
 66/677 Test  #66: ContactBlunt2D
......................................... Passed
   2.92 sec
        Start  67: ContactBlunt2Djump
 67/677 Test  #67: ContactBlunt2Djump
...................................... Passed
6.70 sec
        Start  68: ContactBlunt2Dresmode
 68/677 Test  #68: ContactBlunt2Dresmode
.................................... Passed
2.62 sec
        Start  69: ContactBlunt2Dslide
 69/677 Test  #69: ContactBlunt2Dslide
....................................... Passed
13.46 sec
        Start  70: ContactBlunt2Dstick
 70/677 Test  #70: ContactBlunt2Dstick
....................................... Passed
7.80 sec
        Start  71: ContactBlunt3DLevelProj
 71/677 Test  #71: ContactBlunt3DLevelProj
................................... Passed   21.01
sec
        Start  72: ContactBlunt3DNormalProj
 72/677 Test  #72: ContactBlunt3DNormalProj
.................................. Passed   27.82
sec
        Start  73: ContactFriction
 73/677 Test  #73: ContactFriction
........................................... Passed
   0.80 sec
        Start  74: ContactFrictionHeating
 74/677 Test  #74: ContactFrictionHeating
.................................... Passed    1.09
sec
        Start  75: ContactFrictionNonlin
```

```
151   75/677 Test  #75: ContactFrictionNonlin
      ..................................     Passed
      1.06 sec
152         Start  76: ContactPatch2D
153   76/677 Test  #76: ContactPatch2D
      ........................................     Passed
        0.19 sec
154         Start  77: ContactPatch2Delim
155   77/677 Test  #77: ContactPatch2Delim
      ....................................     Passed
      6.32 sec
156         Start  78: ContactPatch2Dnt
157   78/677 Test  #78: ContactPatch2Dnt
      .......................................     Passed
      0.18 sec
158         Start  79: ContactPatch2DntQuadratic
159   79/677 Test  #79: ContactPatch2DntQuadratic
      ..............................     Passed    0.23
      sec
160         Start  80: ContactPatch2Dtie
161   80/677 Test  #80: ContactPatch2Dtie
      .....................................     Passed
      0.18 sec
162         Start  81: ContactPatch2Dtwo
163   81/677 Test  #81: ContactPatch2Dtwo
      ......................................     Passed
      0.17 sec
164         Start  82: ContactPatch3D
165   82/677 Test  #82: ContactPatch3D
      ............................................     Passed
        1.88 sec
166         Start  83: ContactPatch3D_np4
167   83/677 Test  #83: ContactPatch3D_np4
      .....................................     Passed
      2.01 sec
168         Start  84: ContactPatch3DNames
169   84/677 Test  #84: ContactPatch3DNames
      .....................................     Passed
      1.77 sec
170         Start  85: ContactPatch3DNames_np4
171   85/677 Test  #85: ContactPatch3DNames_np4
      ...............................     Passed    1.78
      sec
172         Start  86: ContactPatch3DNamesAndAutonum
173   86/677 Test  #86: ContactPatch3DNamesAndAutonum
      ..............................     Passed    1.73 sec
```

```
        Start  87:
ContactPatch3DNamesAndAutonum_np4
 87/677 Test  #87:
ContactPatch3DNamesAndAutonum_np4
........................   Passed    1.78 sec
        Start  88: ContactPatch3DNamesAndAutonum2
 88/677 Test  #88: ContactPatch3DNamesAndAutonum2
.........................   Passed    1.79 sec
        Start  89: ContactPatch3DNamesAndAutonum3
 89/677 Test  #89: ContactPatch3DNamesAndAutonum3
.........................   Passed    1.78 sec
        Start  90: ContactPatch3DNormalProj
 90/677 Test  #90: ContactPatch3DNormalProj
..............................   Passed    1.77
sec
        Start  91: ContactPatch3Delim
 91/677 Test  #91: ContactPatch3Delim
...................................   Passed
7.73 sec
        Start  92: ContactPatch3Delim_np4
 92/677 Test  #92: ContactPatch3Delim_np4
...................................   Passed    7.85
sec
        Start  93: ConvergenceControl
 93/677 Test  #93: ConvergenceControl
...................................   Passed
3.59 sec
        Start  94: CooksMembrane
 94/677 Test  #94: CooksMembrane
.........................................
Passed    3.11 sec
        Start  95: CooksMembrane3D
 95/677 Test  #95: CooksMembrane3D
.....................................   Passed
  60.15 sec
        Start  96: CoordinateScaling
 96/677 Test  #96: CoordinateScaling
...................................   Passed
0.16 sec
        Start  97: CoordinateTrans
 97/677 Test  #97: CoordinateTrans
...................................   Passed
   0.32 sec
        Start  98: CoordinateTrans2
 98/677 Test  #98: CoordinateTrans2
...................................   Passed
0.44 sec
```

```
        Start  99: CoupledPoisson1
 99/677 Test  #99: CoupledPoisson1
.......................................   Passed
    0.15 sec
        Start 100: CoupledPoisson1b
100/677 Test #100: CoupledPoisson1b
.......................................   Passed
0.15 sec
        Start 101: CoupledPoisson2
101/677 Test #101: CoupledPoisson2
.......................................   Passed
    0.84 sec
        Start 102: CoupledPoisson2b
102/677 Test #102: CoupledPoisson2b
.......................................   Passed
0.97 sec
        Start 103: CoupledPoisson2c
103/677 Test #103: CoupledPoisson2c
.......................................   Passed
0.89 sec
        Start 104: CoupledPoisson3
104/677 Test #104: CoupledPoisson3
.......................................   Passed
    0.20 sec
        Start 105: CoupledPoisson4
105/677 Test #105: CoupledPoisson4
.......................................   Passed
    0.17 sec
        Start 106: CoupledPoisson5
106/677 Test #106: CoupledPoisson5
.......................................   Passed
    0.18 sec
        Start 107: CoupledPoisson6
107/677 Test #107: CoupledPoisson6
.......................................   Passed
    0.16 sec
        Start 108: CoupledPoisson7
108/677 Test #108: CoupledPoisson7
.......................................   Passed
    0.18 sec
        Start 109: CoupledPoisson8
109/677 Test #109: CoupledPoisson8
.......................................   Passed
    0.16 sec
        Start 110: CoupledPoisson9
```

```
110/677 Test #110: CoupledPoisson9
.........................................          Passed
    0.17 sec
        Start 111: CurvedBndryPFEM
111/677 Test #111: CurvedBndryPFEM
.........................................          Passed
    0.15 sec
        Start 112: CurvedBndryPFEM2
112/677 Test #112: CurvedBndryPFEM2
.........................................          Passed
0.15 sec
        Start 113: CylComAxi
113/677 Test #113: CylComAxi
.............................................
Passed    0.44 sec
        Start 114: CylComStruct
114/677 Test #114: CylComStruct
......................................
Passed    0.82 sec
        Start 115: DNS_WaveSimulation
115/677 Test #115: DNS_WaveSimulation
.......................................          Passed
5.03 sec
        Start 116: DataToField
116/677 Test #116: DataToField
..........................................
Passed    0.47 sec
        Start 117: DataToField2
117/677 Test #117: DataToField2
..........................................
Passed    0.19 sec
        Start 118: DgVariable
118/677 Test #118: DgVariable
............................................
Passed    0.16 sec
        Start 119: DgVariable2
119/677 Test #119: DgVariable2
...........................................
Passed    0.17 sec
        Start 120: DirichletNeumann
120/677 Test #120: DirichletNeumann
.........................................          Passed
0.19 sec
        Start 121: DirichletNeumannSlave
121/677 Test #121: DirichletNeumannSlave
.....................................          Passed
0.18 sec
```

```
        Start 122: DisContBoundary
122/677 Test #122: DisContBoundary
........................................   Passed
    0.15 sec
        Start 123: DisContBoundary3D
123/677 Test #123: DisContBoundary3D
.......................................   Passed
0.24 sec
        Start 124: DisContBoundaryDouble
124/677 Test #124: DisContBoundaryDouble
......................................   Passed
0.22 sec
        Start 125: DisContBoundaryDoubleMortar
125/677 Test #125: DisContBoundaryDoubleMortar
.............................   Passed    0.23 sec
        Start 126: DisContBoundaryDoubleMortar_np4
126/677 Test #126: DisContBoundaryDoubleMortar_np4
........................   Passed    0.38 sec
        Start 127: DisContBoundaryDoubleMortar_np8
127/677 Test #127: DisContBoundaryDoubleMortar_np8
........................***Failed    0.04 sec
        Start 128: DisContBoundaryDoubleNames
128/677 Test #128: DisContBoundaryDoubleNames
.............................   Passed    0.25 sec
        Start 129: DisContBoundaryMortarCont
129/677 Test #129: DisContBoundaryMortarCont
..............................   Passed    0.15
sec
        Start 130: DisContBoundaryMortarCont_np2
130/677 Test #130: DisContBoundaryMortarCont_np2
...........................   Passed    0.19 sec
        Start 131: DisContBoundaryMortarCont_np4
131/677 Test #131: DisContBoundaryMortarCont_np4
............................   Passed    0.35 sec
        Start 132: DisContBoundaryMortarCont_np8
132/677 Test #132: DisContBoundaryMortarCont_np8
...........................***Failed    0.03 sec
        Start 133: DisContBoundaryMortarContElim
133/677 Test #133: DisContBoundaryMortarContElim
...........................   Passed    0.17 sec
        Start 134:
DisContBoundaryMortarContElim_np2
134/677 Test #134:
DisContBoundaryMortarContElim_np2
....................   Passed    0.22 sec
        Start 135:
DisContBoundaryMortarContElim_np4
```

```
271  135/677 Test #135:
     DisContBoundaryMortarContElim_np4
     .......................   Passed    0.34 sec
272          Start 136:
     DisContBoundaryMortarContElim_np8
273  136/677 Test #136:
     DisContBoundaryMortarContElim_np8
     .......................***Failed    0.03 sec
274          Start 137: DisContBoundaryMortarJump
275  137/677 Test #137: DisContBoundaryMortarJump
     ...............................   Passed    0.18
     sec
276          Start 138: DisContBoundaryMortarJump_np2
277  138/677 Test #138: DisContBoundaryMortarJump_np2
     ..........................   Passed    0.18 sec
278          Start 139: DisContBoundaryMortarJump_np4
279  139/677 Test #139: DisContBoundaryMortarJump_np4
     ..........................   Passed    0.35 sec
280          Start 140: DisContBoundaryMortarJump_np8
281  140/677 Test #140: DisContBoundaryMortarJump_np8
     ...........................***Failed    0.03 sec
282          Start 141: DisContBoundaryMortarJumpB
283  141/677 Test #141: DisContBoundaryMortarJumpB
     ..............................   Passed    0.16 sec
284          Start 142: DisContBoundaryMortarJumpB_np2
285  142/677 Test #142: DisContBoundaryMortarJumpB_np2
     .........................   Passed    0.19 sec
286          Start 143: DisContBoundaryMortarJumpB_np4
287  143/677 Test #143: DisContBoundaryMortarJumpB_np4
     .........................   Passed    0.33 sec
288          Start 144: DisContBoundaryMortarJumpB_np8
289  144/677 Test #144: DisContBoundaryMortarJumpB_np8
     ..........................***Failed    0.03 sec
290          Start 145: DisContBoundaryMortarJumpC
291  145/677 Test #145: DisContBoundaryMortarJumpC
     ..............................   Passed    0.16 sec
292          Start 146: DisContBoundaryMortarJumpC_np2
293  146/677 Test #146: DisContBoundaryMortarJumpC_np2
     .........................   Passed    0.19 sec
294          Start 147: DisContBoundaryMortarJumpC_np4
295  147/677 Test #147: DisContBoundaryMortarJumpC_np4
     .........................   Passed    0.34 sec
296          Start 148: DisContBoundaryMortarJumpC_np8
297  148/677 Test #148: DisContBoundaryMortarJumpC_np8
     ..........................***Failed    0.03 sec
298          Start 149: DisContBoundaryNodalJump
```

```
299  149/677 Test #149: DisContBoundaryNodalJump
     ..............................     Passed     0.16
     sec
300          Start 150: DisContBoundaryNodalJumpB
301  150/677 Test #150: DisContBoundaryNodalJumpB
     ..............................     Passed     0.16
     sec
302          Start 151: DisContBoundaryNodalProj
303  151/677 Test #151: DisContBoundaryNodalProj
     ..............................     Passed     0.17
     sec
304          Start 152: DistributeSourceMgdyn
305  152/677 Test #152: DistributeSourceMgdyn
     ...................................     Passed
     0.89 sec
306          Start 153: DivergenceAnalytic2D
307  153/677 Test #153: DivergenceAnalytic2D
     .....................................     Passed
     0.58 sec
308          Start 154: EMWaveBoxHexas
309  154/677 Test #154: EMWaveBoxHexas
     .........................................     Passed
       1.45 sec
310          Start 155: EMWaveBoxHexasPiola
311  155/677 Test #155: EMWaveBoxHexasPiola
     ......................................     Passed
     0.87 sec
312          Start 156: EMWaveBoxHexasQuad
313  156/677 Test #156: EMWaveBoxHexasQuad
     .......................................     Passed
     3.43 sec
314          Start 157: EMWavePiola2D
315  157/677 Test #157: EMWavePiola2D
     .........................................
     Passed     0.61 sec
316          Start 158: EdgeElementInterpolation
317  158/677 Test #158: EdgeElementInterpolation
     ...............................     Passed     1.03
     sec
318          Start 159: ElastElstat1DBeam
319  159/677 Test #159: ElastElstat1DBeam
     .......................................     Passed
     0.21 sec
320          Start 160: ElastElstatBeam
321  160/677 Test #160: ElastElstatBeam
     ........................................     Passed
       0.22 sec
```

```
         Start 161: ElastElstatBeamNodal
161/677 Test #161: ElastElstatBeamNodal
.....................................   Passed
0.25 sec
         Start 162: ElastPelem
162/677 Test #162: ElastPelem
...............................................
Passed     2.28 sec
         Start 163: ElasticBeamRestart
163/677 Test #163: ElasticBeamRestart
.......................................   Passed
6.12 sec
         Start 164: ElasticLubrication
164/677 Test #164: ElasticLubrication
.......................................   Passed
1.09 sec
         Start 165: Electrokinetics
165/677 Test #165: Electrokinetics
...........................................   Passed
   5.59 sec
         Start 166: ElemVariable
166/677 Test #166: ElemVariable
.............................................
Passed     0.18 sec
         Start 167: ElemVariable2
167/677 Test #167: ElemVariable2
.............................................
Passed     0.18 sec
         Start 168: ElmerGridCloneZ
168/677 Test #168: ElmerGridCloneZ
...........................................   Passed
   0.19 sec
         Start 169: ElmerGridCloneZ_np3
169/677 Test #169: ElmerGridCloneZ_np3
......................................   Passed
0.35 sec
         Start 170: ElmerGridExtrudeHelicity
170/677 Test #170: ElmerGridExtrudeHelicity
...................................   Passed     0.34
sec
         Start 171: ElmerGridExtrudeMaterial
171/677 Test #171: ElmerGridExtrudeMaterial
...................................   Passed     0.24
sec
         Start 172: ElmerGridExtrudeMaterial2
```

```
345  172/677 Test #172: ElmerGridExtrudeMaterial2
     ..............................    Passed    0.30
     sec
346          Start 173: ElmerGridExtrudeOffset
347  173/677 Test #173: ElmerGridExtrudeOffset
     .................................    Passed    0.25
     sec
348          Start 174: ExpVariableDer
349  174/677 Test #174: ExpVariableDer
     ...............................    Passed
        0.58 sec
350          Start 175: ExtrudedMesh
351  175/677 Test #175: ExtrudedMesh
     ............................................
     Passed    0.17 sec
352          Start 176: ExtrudedMesh2
353  176/677 Test #176: ExtrudedMesh2
     .........................................
     Passed    0.20 sec
354          Start 177: ExtrudedMesh3
355  177/677 Test #177: ExtrudedMesh3
     .........................................
     Passed    0.26 sec
356          Start 178: ExtrudedMesh4
357  178/677 Test #178: ExtrudedMesh4
     .........................................
     Passed    0.22 sec
358          Start 179: ExtrudedMesh5
359  179/677 Test #179: ExtrudedMesh5
     .........................................
     Passed    1.43 sec
360          Start 180: ExtrudedMesh6
361  180/677 Test #180: ExtrudedMesh6
     .........................................
     Passed    0.19 sec
362          Start 181: ExtrudedMesh7
363  181/677 Test #181: ExtrudedMesh7
     .........................................
     Passed    0.15 sec
364          Start 182: ExtrudedMeshBaseline1
365  182/677 Test #182: ExtrudedMeshBaseline1
     ................................    Passed
     0.19 sec
366          Start 183: ExtrudedMeshDG
367  183/677 Test #183: ExtrudedMeshDG
     ..........................................    Passed
        2.81 sec
```

```
        Start 184: ExtrusionStructured2D
184/677 Test #184: ExtrusionStructured2D
...................................   Passed
1.12 sec
        Start 185: FaceElement2D_BCs
185/677 Test #185: FaceElement2D_BCs
.........................................   Passed
0.14 sec
        Start 186: FaceElement3D_BCs
186/677 Test #186: FaceElement3D_BCs
.........................................   Passed
0.30 sec
        Start 187: FacetShell
187/677 Test #187: FacetShell
..................................................
Passed    0.24 sec
        Start 188: FacetShell2
188/677 Test #188: FacetShell2
..................................................
Passed    0.34 sec
        Start 189: FixPotentialLevels
189/677 Test #189: FixPotentialLevels
.......................................   Passed
0.21 sec
        Start 190: FlowResNoslip
190/677 Test #190: FlowResNoslip
...............................................
Passed    3.35 sec
        Start 191: FlowResSlip
191/677 Test #191: FlowResSlip
................................................
Passed    3.14 sec
        Start 192: FourierLoss
192/677 Test #192: FourierLoss
...............................................
Passed    1.07 sec
        Start 193: H1BasisEvaluation
193/677 Test #193: H1BasisEvaluation
......................................   Passed
4.31 sec
        Start 194: HarmonicNS
194/677 Test #194: HarmonicNS
..............................................
Passed    0.87 sec
        Start 195: HeatAndDiffusion
```

```
195/677 Test #195: HeatAndDiffusion
...................................... Passed
0.33 sec
        Start 196: HeatControl
196/677 Test #196: HeatControl
.........................................
Passed    0.16 sec
        Start 197: HeatControl2
197/677 Test #197: HeatControl2
.........................................
Passed    0.17 sec
        Start 198: HeatGap
198/677 Test #198: HeatGap
...........................................
Passed    0.18 sec
        Start 199: HeatPlateSym
199/677 Test #199: HeatPlateSym
.........................................
Passed    1.97 sec
        Start 200: HeatUniso
200/677 Test #200: HeatUniso
...........................................
Passed    0.17 sec
        Start 201: HeatUnisoMATC
201/677 Test #201: HeatUnisoMATC
........................................
Passed    0.32 sec
        Start 202: HeatUnisoTable
202/677 Test #202: HeatUnisoTable
.......................................... Passed
    0.20 sec
        Start 203: HeatUnisoUDF
203/677 Test #203: HeatUnisoUDF
........................................
Passed    0.33 sec
        Start 204: HelmholtzBEM
204/677 Test #204: HelmholtzBEM
........................................
Passed    0.50 sec
        Start 205: HelmholtzEdge
205/677 Test #205: HelmholtzEdge
........................................
Passed    0.24 sec
        Start 206: HelmholtzFEM
206/677 Test #206: HelmholtzFEM
........................................
Passed    0.20 sec
```

```
        Start 207: HelmholtzFace
207/677 Test #207: HelmholtzFace
.......................................
Passed    0.27 sec
        Start 208: HelmholtzPlaneWaves
208/677 Test #208: HelmholtzPlaneWaves
...................................   Passed
0.37 sec
        Start 209: HelmholtzPlaneWavesAxis
209/677 Test #209: HelmholtzPlaneWavesAxis
..................................   Passed    0.39
sec
        Start 210: HelmholtzPlaneWavesScan
210/677 Test #210: HelmholtzPlaneWavesScan
..................................   Passed    1.18
sec
        Start 211: HelmholtzStructure
211/677 Test #211: HelmholtzStructure
.....................................   Passed
0.35 sec
        Start 212: HelmholtzStructure2
212/677 Test #212: HelmholtzStructure2
....................................   Passed
0.26 sec
        Start 213: HelmholtzStructure3
213/677 Test #213: HelmholtzStructure3
....................................   Passed
0.64 sec
        Start 214: Hybrid2dMeshPartitionCyl_np8
214/677 Test #214: Hybrid2dMeshPartitionCyl_np8
............................***Failed    0.82 sec
        Start 215: Hybrid2dMeshPartitionMetis_np8
215/677 Test #215: Hybrid2dMeshPartitionMetis_np8
...........................***Failed    0.81 sec
        Start 216:
Hybrid2dMeshPartitionMetisConnect_np8
216/677 Test #216:
Hybrid2dMeshPartitionMetisConnect_np8
...................***Failed    0.81 sec
        Start 217: HybridMeshMap
217/677 Test #217: HybridMeshMap
.........................................
Passed    0.52 sec
        Start 218: InductionHeating
218/677 Test #218: InductionHeating
.......................................   Passed
0.27 sec
```

```
        Start 219: InductionHeating2
219/677 Test #219: InductionHeating2
.......................................   Passed
0.37 sec
        Start 220: InductionHeating3
220/677 Test #220: InductionHeating3
.......................................   Passed
0.30 sec
        Start 221: InternalPartitioning
221/677 Test #221: InternalPartitioning
......................................   Passed
1.29 sec
        Start 222: InternalPartitioning_np8
222/677 Test #222: InternalPartitioning_np8
..............................***Failed    0.56
sec
        Start 223: InternalPartitioning2
223/677 Test #223: InternalPartitioning2
.....................................   Passed
1.25 sec
        Start 224: InternalPartitioning2_np6
224/677 Test #224: InternalPartitioning2_np6
..............................***Failed    0.54
sec
        Start 225: InternalPartitioning3
225/677 Test #225: InternalPartitioning3
....................................   Passed
1.33 sec
        Start 226: InternalPartitioning3_np6
226/677 Test #226: InternalPartitioning3_np6
...............................***Failed    0.69
sec
        Start 227: InternalPartitioning4
227/677 Test #227: InternalPartitioning4
...................................   Passed
0.58 sec
        Start 228: InternalPartitioning5
228/677 Test #228: InternalPartitioning5
...................................   Passed
0.70 sec
        Start 229: InternalPartitioning6
229/677 Test #229: InternalPartitioning6
...................................   Passed
0.51 sec
        Start 230: IpVariable
```

```
230/677 Test #230: IpVariable
.............................................
Passed    0.20 sec
        Start 231: IpVariable2
231/677 Test #231: IpVariable2
..........................................
Passed    0.22 sec
        Start 232: IpVariable3
232/677 Test #232: IpVariable3
..........................................
Passed    0.19 sec
        Start 233: IsolineGmsh
233/677 Test #233: IsolineGmsh
..........................................
Passed    0.23 sec
        Start 234: JouleHeatToOpenFOAM
234/677 Test #234: JouleHeatToOpenFOAM
...................................   Passed
0.45 sec
        Start 235: KeywordCompare
235/677 Test #235: KeywordCompare
....................................   Passed
   1.91 sec
        Start 236: KeywordCompare2
236/677 Test #236: KeywordCompare2
....................................   Passed
   6.25 sec
        Start 237: KeywordCompare3
237/677 Test #237: KeywordCompare3
....................................   Passed
   5.82 sec
        Start 238: KeywordCompare4
238/677 Test #238: KeywordCompare4
....................................   Passed
   0.21 sec
        Start 239: KeywordCompare5
239/677 Test #239: KeywordCompare5
....................................   Passed
   4.79 sec
        Start 240: L2norm
240/677 Test #240: L2norm
..........................................
   Passed    1.04 sec
        Start 241: LevelsetFallingDrop
241/677 Test #241: LevelsetFallingDrop
.................................   Passed
4.40 sec
```

```
        Start 242: LimitDisplacement
242/677 Test #242: LimitDisplacement
..................................   Passed
1.82 sec
        Start 243: LimitDisplacement2
243/677 Test #243: LimitDisplacement2
..................................   Passed
3.64 sec
        Start 244: LimitDisplacement3
244/677 Test #244: LimitDisplacement3
..................................   Passed
1.16 sec
        Start 245: LimitTemperature
245/677 Test #245: LimitTemperature
..................................    Passed
7.25 sec
        Start 246: LimitTemperature2
246/677 Test #246: LimitTemperature2
..................................   Passed
7.17 sec
        Start 247: LinearFormsAssembly
247/677 Test #247: LinearFormsAssembly
..................................    Passed
73.12 sec
        Start 248: LinearSystemNamespace
248/677 Test #248: LinearSystemNamespace
..................................     Passed
0.15 sec
        Start 249: LinearSystemNamespace2
249/677 Test #249: LinearSystemNamespace2
..................................   Passed    0.16
sec
        Start 250: LubricationTunedForce
250/677 Test #250: LubricationTunedForce
..................................   Passed
0.39 sec
        Start 251: MarchingODE1
251/677 Test #251: MarchingODE1
...........................................
Passed    0.14 sec
        Start 252: MarchingODE2
252/677 Test #252: MarchingODE2
...........................................
Passed    0.16 sec
        Start 253: MazeMeshPartitionMetisContig_np6
253/677 Test #253: MazeMeshPartitionMetisContig_np6
.......................***Failed    0.03 sec
```

```
        Start 254: MeshColour
254/677 Test #254: MeshColour
.......................................
Passed    0.48 sec
        Start 255: MeshLevelsRestart
255/677 Test #255: MeshLevelsRestart
.................................   Passed
0.41 sec
        Start 256: MeshRefineGrading
256/677 Test #256: MeshRefineGrading
.................................   Passed
1.54 sec
        Start 257: MeshSolverCubeToSphere
257/677 Test #257: MeshSolverCubeToSphere
..............................   Passed   2.02
sec
        Start 258: MeshSwap1
258/677 Test #258: MeshSwap1
........................................
Passed    0.19 sec
        Start 259: MgDynDiscontBCs
259/677 Test #259: MgDynDiscontBCs
...................................   Passed
   1.23 sec
        Start 260: MinimalExample
260/677 Test #260: MinimalExample
..................................   Passed
   0.18 sec
        Start 261: MixedPoisson2D
261/677 Test #261: MixedPoisson2D
...................................   Passed
   0.20 sec
        Start 262: MixedPoisson3D
262/677 Test #262: MixedPoisson3D
...................................   Passed
   3.66 sec
        Start 263: ModelPDE
263/677 Test #263: ModelPDE
.............................................***
Failed    2.14 sec
        Start 264: ModelPDEevol
264/677 Test #264: ModelPDEevol
.....................................
Passed    0.17 sec
        Start 265: ModelPDEhandle
```

```
531  265/677 Test #265: ModelPDEhandle
     ............................................   Passed
         0.17 sec
532          Start 266: ModelPDEipadapt
533  266/677 Test #266: ModelPDEipadapt
     ...........................................   Passed
         0.39 sec
534          Start 267: ModelPDEsplitted
535  267/677 Test #267: ModelPDEsplitted
     ..........................................   Passed
     0.19 sec
536          Start 268: ModelPDEthreaded
537  268/677 Test #268: ModelPDEthreaded
     ..........................................   Passed
     0.16 sec
538          Start 269: MortarMixedDimensions
539  269/677 Test #269: MortarMixedDimensions
     .......................................   Passed
     0.21 sec
540          Start 270: MortarPoisson2D
541  270/677 Test #270: MortarPoisson2D
     ...........................................   Passed
         0.18 sec
542          Start 271: MortarPoisson2Dpriority
543  271/677 Test #271: MortarPoisson2Dpriority
     ....................................   Passed    0.17
     sec
544          Start 272: MortarPoisson2Dsum
545  272/677 Test #272: MortarPoisson2Dsum
     .........................................   Passed
     0.20 sec
546          Start 273: MortarPoissonPartz3D_np6
547  273/677 Test #273: MortarPoissonPartz3D_np6
     ..................................***Failed    0.07
     sec
548          Start 274: MortarPoissonPartz3D_np8
549  274/677 Test #274: MortarPoissonPartz3D_np8
     ..................................***Failed    0.08
     sec
550          Start 275: NaturalConvection
551  275/677 Test #275: NaturalConvection
     ........................................   Passed
     2.32 sec
552          Start 276: NaturalConvection2
553  276/677 Test #276: NaturalConvection2
     .........................................   Passed
     1.84 sec
```

```
        Start 277: NaturalConvection3
277/677 Test #277: NaturalConvection3
...................................   Passed
3.56 sec
        Start 278: NaturalConvectionRestart
278/677 Test #278: NaturalConvectionRestart
...............................   Passed    3.35
sec
        Start 279: NeoHookean2D
279/677 Test #279: NeoHookean2D
.........................................
Passed    0.57 sec
        Start 280: NonconformingRestart
280/677 Test #280: NonconformingRestart
.................................   Passed
0.18 sec
        Start 281: NonconformingRestart2
281/677 Test #281: NonconformingRestart2
................................   Passed
0.20 sec
        Start 282: NonconformingRestart2par_np3
282/677 Test #282: NonconformingRestart2par_np3
............................   Passed    0.34 sec
        Start 283: NonconformingRestart3
283/677 Test #283: NonconformingRestart3
...................................   Passed
0.25 sec
        Start 284: NonconformingRestart4
284/677 Test #284: NonconformingRestart4
...................................   Passed
0.40 sec
        Start 285: NonconformingRestartStructmap
285/677 Test #285: NonconformingRestartStructmap
............................   Passed    0.24 sec
        Start 286:
NonconformingRestartStructmap_np4
286/677 Test #286:
NonconformingRestartStructmap_np4
......................   Passed    0.39 sec
        Start 287: NonnewtonianChannelFlow
287/677 Test #287: NonnewtonianChannelFlow
..................................   Passed    0.40
sec
        Start 288: NonnewtonianChannelFlow_vec
288/677 Test #288: NonnewtonianChannelFlow_vec
.............................   Passed    1.83 sec
        Start 289: NormalTangentialBC
```

```
579  289/677 Test #289: NormalTangentialBC
     ......................................        Passed
     0.78 sec
580          Start 290: NormalTangentialDisplacement
581  290/677 Test #290: NormalTangentialDisplacement
     ...........................        Passed        0.37 sec
582          Start 291: NormalTangentialDisplacement2
583  291/677 Test #291: NormalTangentialDisplacement2
     ...........................        Passed        0.28 sec
584          Start 292: NormalizeBC
585  292/677 Test #292: NormalizeBC
     .................................................
     Passed        0.15 sec
586          Start 293: NormalizeBF
587  293/677 Test #293: NormalizeBF
     .................................................
     Passed        0.16 sec
588          Start 294: NormalizeMaterial
589  294/677 Test #294: NormalizeMaterial
     ..........................................        Passed
     0.18 sec
590          Start 295: NtCartesianBC
591  295/677 Test #295: NtCartesianBC
     ...........................................
     Passed        2.85 sec
592          Start 296: OdeSolver1stOrder
593  296/677 Test #296: OdeSolver1stOrder
     ..........................................        Passed
     0.20 sec
594          Start 297: OdeSolver2ndOrder
595  297/677 Test #297: OdeSolver2ndOrder
     ..........................................        Passed
     0.19 sec
596          Start 298: OptimizeSimplexFourHeaters
597  298/677 Test #298: OptimizeSimplexFourHeaters
     ..............................        Passed        1.56 sec
598          Start 299: OtherMeshResults
599  299/677 Test #299: OtherMeshResults
     ...........................................        Passed
     0.18 sec
600          Start 300: OtherMeshResults_np4
601  300/677 Test #300: OtherMeshResults_np4
     .......................................        Passed
     0.44 sec
602          Start 301: ParStokes_ISMIP_HOM_A010
```

```
301/677 Test #301: ParStokes_ISMIP_HOM_A010
.................................        Passed  149.56
sec
        Start 302: ParStokes_NormalTangentialBC
302/677 Test #302: ParStokes_NormalTangentialBC
...........................        Passed    0.57 sec
        Start 303: ParStokes_NormalTangentialBC3D
303/677 Test #303: ParStokes_NormalTangentialBC3D
.........................        Passed   32.71 sec
        Start 304: ParamFourHeaters
304/677 Test #304: ParamFourHeaters
........................................        Passed
0.19 sec
        Start 305: ParticleAdvector
305/677 Test #305: ParticleAdvector
........................................        Passed
0.85 sec
        Start 306: ParticleAdvector2
306/677 Test #306: ParticleAdvector2
.......................................        Passed
1.43 sec
        Start 307: ParticleAdvector3
307/677 Test #307: ParticleAdvector3
.......................................        Passed
1.00 sec
        Start 308: ParticleAdvector3dg
308/677 Test #308: ParticleAdvector3dg
......................................        Passed
1.67 sec
        Start 309: ParticleAdvector3elemental
309/677 Test #309: ParticleAdvector3elemental
.............................        Passed    1.11 sec
        Start 310: ParticleAdvector3ip
310/677 Test #310: ParticleAdvector3ip
......................................        Passed
1.70 sec
        Start 311: ParticleAdvectorPathIntegral
311/677 Test #311: ParticleAdvectorPathIntegral
...........................        Passed    4.18 sec
        Start 312: ParticleAdvectorZalesak
312/677 Test #312: ParticleAdvectorZalesak
...................................        Passed    2.51
sec
        Start 313: ParticleFalling
313/677 Test #313: ParticleFalling
.......................................        Passed
    0.24 sec
```

```
        Start 314: ParticleFalling2
314/677 Test #314: ParticleFalling2
.......................................   Passed
0.20 sec
        Start 315: ParticleFalling3
315/677 Test #315: ParticleFalling3
.......................................   Passed
0.23 sec
        Start 316: ParticleFallingBlock
316/677 Test #316: ParticleFallingBlock
.....................................   Passed
1.25 sec
        Start 317: ParticleHeating
317/677 Test #317: ParticleHeating
..........................................   Passed
   1.34 sec
        Start 318: PartitioningDirectionalQuads_np4
318/677 Test #318: PartitioningDirectionalQuads_np4
.......................   Passed    0.74 sec
        Start 319: PartitioningUniformQuads_np3
319/677 Test #319: PartitioningUniformQuads_np3
...........................   Passed    0.73 sec
        Start 320: PeriodicTime
320/677 Test #320: PeriodicTime
.............................................
Passed    0.64 sec
        Start 321: PhaseChange
321/677 Test #321: PhaseChange
..............................................
Passed    1.30 sec
        Start 322: PhaseChange2
322/677 Test #322: PhaseChange2
.............................................
Passed    0.41 sec
        Start 323: PhaseChange3
323/677 Test #323: PhaseChange3
.............................................
Passed    0.39 sec
        Start 324: PhaseChangeB
324/677 Test #324: PhaseChangeB
.............................................
Passed    1.32 sec
        Start 325: PlatesHarmonic
325/677 Test #325: PlatesHarmonic
............................................   Passed
   0.22 sec
        Start 326: PlatesHarmonic2
```

```
326/677 Test #326: PlatesHarmonic2
...........................................        Passed
    0.20 sec
        Start 327: PlatesHarmonic3
327/677 Test #327: PlatesHarmonic3
...........................................        Passed
    0.70 sec
        Start 328: PoissonBEM
328/677 Test #328: PoissonBEM
.............................................
Passed    0.17 sec
        Start 329: PoissonBoltzmann
329/677 Test #329: PoissonBoltzmann
............................................     Passed
1.64 sec
        Start 330: PoissonDB
330/677 Test #330: PoissonDB
..........................................
Passed    0.17 sec
        Start 331: PoissonDB_np4
331/677 Test #331: PoissonDB_np4
.........................................
Passed    0.34 sec
        Start 332: PoissonDB_np8
332/677 Test #332: PoissonDB_np8
.......................................***Faile
d    0.03 sec
        Start 333: PoissonDG
333/677 Test #333: PoissonDG
............................................
Passed    0.24 sec
        Start 334: PoissonDG_np3
334/677 Test #334: PoissonDG_np3
.........................................
Passed    0.37 sec
        Start 335: PoissonDG_np8
335/677 Test #335: PoissonDG_np8
.......................................***Faile
d    0.03 sec
        Start 336: PoissonPFEM
336/677 Test #336: PoissonPFEM
..............................................
Passed    0.17 sec
        Start 337: PoissonThreaded
337/677 Test #337: PoissonThreaded
...........................................        Passed
    1.40 sec
```

```
        Start 338: PoissonThreaded2
338/677 Test #338: PoissonThreaded2
...........................................   Passed
1.40 sec
        Start 339: PoissonThreaded3
339/677 Test #339: PoissonThreaded3
...........................................   Passed
1.65 sec
        Start 340: PoissonToroid3D
340/677 Test #340: PoissonToroid3D
...........................................   Passed
   2.14 sec
        Start 341: PorousPipe
341/677 Test #341: PorousPipe
..............................................
Passed    0.36 sec
        Start 342: PredictorCorrector
342/677 Test #342: PredictorCorrector
.........................................   Passed
0.47 sec
        Start 343: Q1Q0
343/677 Test #343: Q1Q0
...............................................
.   Passed    0.20 sec
        Start 344: QuadraturesBrick
344/677 Test #344: QuadraturesBrick
..........................................   Passed
0.20 sec
        Start 345: QuadraturesWedge
345/677 Test #345: QuadraturesWedge
..........................................   Passed
0.21 sec
        Start 346: RaviartThomas2D
346/677 Test #346: RaviartThomas2D
............................................   Passed
   0.18 sec
        Start 347: RaviartThomas3D
347/677 Test #347: RaviartThomas3D
............................................   Passed
   0.54 sec
        Start 348: RichardsDyke
348/677 Test #348: RichardsDyke
.........................................
Passed    2.13 sec
        Start 349: RichardsDyke2
```

```
699  349/677 Test #349: RichardsDyke2
     ..........................................
     Passed    3.47 sec
700         Start 350: RigidMeshMapper1
701  350/677 Test #350: RigidMeshMapper1
     ........................................    Passed
     0.29 sec
702         Start 351: RigidMeshMapper2
703  351/677 Test #351: RigidMeshMapper2
     ........................................    Passed
     0.28 sec
704         Start 352: RotatingBCMagnetoDynamics
705  352/677 Test #352: RotatingBCMagnetoDynamics
     ..................................    Passed    4.16
     sec
706         Start 353: RotatingBCMagnetoDynamics2
707  353/677 Test #353: RotatingBCMagnetoDynamics2
     ..................................    Passed   11.95 sec
708         Start 354:
     RotatingBCMagnetoDynamicsConforming
709  354/677 Test #354:
     RotatingBCMagnetoDynamicsConforming
     ....................    Passed   31.41 sec
710         Start 355:
     RotatingBCMagnetoDynamicsConformingAnti
711  355/677 Test #355:
     RotatingBCMagnetoDynamicsConformingAnti
     ..................    Passed    3.64 sec
712         Start 356: RotatingBCMagnetoDynamicsGeneric
713  356/677 Test #356: RotatingBCMagnetoDynamicsGeneric
     ........................    Passed   23.14 sec
714         Start 357: RotatingBCPoisson2D
715  357/677 Test #357: RotatingBCPoisson2D
     ......................................    Passed
     0.84 sec
716         Start 358: RotatingBCPoisson3D
717  358/677 Test #358: RotatingBCPoisson3D
     ......................................    Passed
     3.59 sec
718         Start 359: RotatingBCPoisson3DGeneric
719  359/677 Test #359: RotatingBCPoisson3DGeneric
     ..............................    Passed    5.24 sec
720         Start 360: RotatingBCPoisson3DNT
721  360/677 Test #360: RotatingBCPoisson3DNT
     ......................................    Passed
     0.82 sec
722         Start 361: RotatingBCPoisson3DSymmSkew
```

```
361/677 Test #361: RotatingBCPoisson3DSymmSkew
................................   Passed    2.34 sec
        Start 362: RotatingBCPoisson3Daxial
362/677 Test #362: RotatingBCPoisson3Daxial
..................................   Passed    4.80
sec
        Start 363: RotatingBCPoisson3Daxial_np6
363/677 Test #363: RotatingBCPoisson3Daxial_np6
...............................***Failed    0.07 sec
        Start 364: RotatingBeamFlow
364/677 Test #364: RotatingBeamFlow
...........................................   Passed
4.31 sec
        Start 365: RotatingFlow
365/677 Test #365: RotatingFlow
..............................................
Passed    0.40 sec
        Start 366: RotatingHT2D
366/677 Test #366: RotatingHT2D
..............................................
Passed    0.81 sec
        Start 367: SaveCircle
367/677 Test #367: SaveCircle
................................................
Passed    0.70 sec
        Start 368: SaveDependence
368/677 Test #368: SaveDependence
...........................................   Passed
    0.20 sec
        Start 369: SaveDependenceSpline
369/677 Test #369: SaveDependenceSpline
.......................................   Passed
0.15 sec
        Start 370: SaveLine
370/677 Test #370: SaveLine
................................................
Passed    0.75 sec
        Start 371: SecondOrderEdgeElement2D
371/677 Test #371: SecondOrderEdgeElement2D
.....................................   Passed    0.50
sec
        Start 372: SecondOrderEdgeElement2D_BCs
372/677 Test #372: SecondOrderEdgeElement2D_BCs
............................   Passed    0.14 sec
        Start 373: SecondOrderEdgeElement3D
```

```
373/677 Test #373: SecondOrderEdgeElement3D
..................................   Passed    0.32
sec
        Start 374: SensTemperature
374/677 Test #374: SensTemperature
...........................................   Passed
   0.46 sec
        Start 375: ShallowWaterNS
375/677 Test #375: ShallowWaterNS
.............................................   Passed
   1.09 sec
        Start 376: Shell_And_Solid
376/677 Test #376: Shell_And_Solid
.............................................   Passed
   0.16 sec
        Start 377: Shell_And_Solid2
377/677 Test #377: Shell_And_Solid2
..............................................   Passed
0.20 sec
        Start 378:
Shell_BenchmarkCase1_ElementalDirector
378/677 Test #378:
Shell_BenchmarkCase1_ElementalDirector
..................   Passed    2.98 sec
        Start 379: Shell_BenchmarkCase1_Quad
379/677 Test #379: Shell_BenchmarkCase1_Quad
...............................   Passed    3.00
sec
        Start 380: Shell_BenchmarkCase1_Tria
380/677 Test #380: Shell_BenchmarkCase1_Tria
..............................   Passed    3.28
sec
        Start 381: Shell_BenchmarkCase2_Quad
381/677 Test #381: Shell_BenchmarkCase2_Quad
..............................   Passed    3.25
sec
        Start 382: Shell_BenchmarkCase2_Tria
382/677 Test #382: Shell_BenchmarkCase2_Tria
..............................   Passed    3.21
sec
        Start 383: Shell_Cantilever
383/677 Test #383: Shell_Cantilever
.............................................   Passed
0.22 sec
        Start 384: Shell_Eigenanalysis_Cylinder
384/677 Test #384: Shell_Eigenanalysis_Cylinder
...........................   Passed    0.69 sec
```

```
        Start 385: Shell_Eigenanalysis_Spherical
385/677 Test #385: Shell_Eigenanalysis_Spherical
.............................        Passed    1.36 sec
        Start 386: Shell_OpenHemisphere
386/677 Test #386: Shell_OpenHemisphere
..................................        Passed
4.61 sec
        Start 387: Shell_PinchedCylinder
387/677 Test #387: Shell_PinchedCylinder
....................................        Passed
20.93 sec
        Start 388: Shell_PlateCase_Quad
388/677 Test #388: Shell_PlateCase_Quad
......................................        Passed
0.27 sec
        Start 389: Shell_With_NormalSolver
389/677 Test #389: Shell_With_NormalSolver
................................        Passed    7.19
sec
        Start 390: Shell_With_NormalSolver_np2
390/677 Test #390: Shell_With_NormalSolver_np2
............................        Passed    6.87 sec
        Start 391: ShoeboxFsiHarmonic
391/677 Test #391: ShoeboxFsiHarmonic
........................................        Passed
4.84 sec
        Start 392: ShoeboxFsiHarmonic2D
392/677 Test #392: ShoeboxFsiHarmonic2D
.................................        Passed
0.19 sec
        Start 393: ShoeboxFsiHarmonicPlate
393/677 Test #393: ShoeboxFsiHarmonicPlate
...............................        Passed    2.29
sec
        Start 394: ShoeboxFsiStatic
394/677 Test #394: ShoeboxFsiStatic
.....................................        Passed
1.23 sec
        Start 395: ShoeboxFsiStaticPlate
395/677 Test #395: ShoeboxFsiStaticPlate
...............................        Passed
0.70 sec
        Start 396: ShoeboxFsiStaticShell
396/677 Test #396: ShoeboxFsiStaticShell
..............................        Passed
1.14 sec
        Start 397: ShoeboxHarmonicPlate
```

```
397/677 Test #397: ShoeboxHarmonicPlate
................................... Passed
0.59 sec
        Start 398: ShoeboxHarmonicShell
398/677 Test #398: ShoeboxHarmonicShell
................................... Passed
0.66 sec
        Start 399: ShoeboxStaticPlate
399/677 Test #399: ShoeboxStaticPlate
..................................... Passed
0.22 sec
        Start 400: ShoeboxStaticShell
400/677 Test #400: ShoeboxStaticShell
..................................... Passed
0.55 sec
        Start 401: SinPlane
401/677 Test #401: SinPlane
.........................................
Passed     2.91 sec
        Start 402: SlaveSolverSlots
402/677 Test #402: SlaveSolverSlots
.................................... Passed
0.19 sec
        Start 403: SlaveSolverSlotsScan
403/677 Test #403: SlaveSolverSlotsScan
................................... Passed
0.16 sec
        Start 404: StatCurrentVec
404/677 Test #404: StatCurrentVec
......................................... Passed
   0.17 sec
        Start 405: StatCurrentVec2
405/677 Test #405: StatCurrentVec2
......................................... Passed
   0.17 sec
        Start 406: StatCurrentVecFarfield
406/677 Test #406: StatCurrentVecFarfield
.................................. Passed    0.18
sec
        Start 407: StatCurrentVecResMatrix
407/677 Test #407: StatCurrentVecResMatrix
.................................. Passed    0.24
sec
        Start 408: StatCurrentVecUniso
408/677 Test #408: StatCurrentVecUniso
..................................... Passed
0.16 sec
```

```
        Start 409: Step_ke
409/677 Test #409: Step_ke
.............................................
Passed    0.82 sec
        Start 410: Step_ns
410/677 Test #410: Step_ns
.............................................
Passed    0.31 sec
        Start 411: Step_sa
411/677 Test #411: Step_sa
.............................................
Passed    2.96 sec
        Start 412: Step_sst-kw-wf
412/677 Test #412: Step_sst-kw-wf
.......................................   Passed
   5.05 sec
        Start 413: Step_stokes
413/677 Test #413: Step_stokes
............................................
Passed    0.19 sec
        Start 414: Step_stokes_block
414/677 Test #414: Step_stokes_block
.....................................   Passed
0.22 sec
        Start 415: Step_stokes_vec
415/677 Test #415: Step_stokes_vec
.......................................   Passed
   0.18 sec
        Start 416: Step_v2f
416/677 Test #416: Step_v2f
...........................................
Passed    8.53 sec
        Start 417: StokesPFEM
417/677 Test #417: StokesPFEM
..............................................
Passed    0.21 sec
        Start 418: StokesProj
418/677 Test #418: StokesProj
..............................................
Passed    0.36 sec
        Start 419: StrainCalculation01
419/677 Test #419: StrainCalculation01
......................................   Passed
0.28 sec
        Start 420: StrainCalculation02
```

```
841  420/677 Test #420: StrainCalculation02
     .......................................      Passed
     2.86 sec
842          Start 421: StrainCalculation03
843  421/677 Test #421: StrainCalculation03
     .......................................      Passed
     3.67 sec
844          Start 422: StressConstraintModes
845  422/677 Test #422: StressConstraintModes
     ....................................      Passed
     0.22 sec
846          Start 423: StressConstraintModes2
847  423/677 Test #423: StressConstraintModes2
     ....................................      Passed     0.17
     sec
848          Start 424: StressConstraintModes3
849  424/677 Test #424: StressConstraintModes3
     ....................................      Passed     20.52
     sec
850          Start 425: StressEigen
851  425/677 Test #425: StressEigen
     ..................................................
     Passed      0.51 sec
852          Start 426: StressEigen3D
853  426/677 Test #426: StressEigen3D
     ..............................................
     Passed    12.81 sec
854          Start 427: StructuredHeightDepth
855  427/677 Test #427: StructuredHeightDepth
     .......................................      Passed
     1.38 sec
856          Start 428: StructuredSpread
857  428/677 Test #428: StructuredSpread
     ...........................................      Passed
     0.93 sec
858          Start 429: TankAst
859  429/677 Test #429: TankAst
     ....................................................
     Passed     0.21 sec
860          Start 430: TemperatureFromOpenFOAM
861  430/677 Test #430: TemperatureFromOpenFOAM
     ....................................      Passed     1.09
     sec
862          Start 431: ThermalActuator
863  431/677 Test #431: ThermalActuator
     ...............................................      Passed
       14.09 sec
```

```
      Start 432: ThermalBiMetal
432/677 Test #432: ThermalBiMetal
.......................................   Passed
    0.20 sec
      Start 433: ThermalBiMetal2
433/677 Test #433: ThermalBiMetal2
.......................................   Passed
    0.22 sec
      Start 434: ThermalCompress
434/677 Test #434: ThermalCompress
.......................................   Passed
    0.38 sec
      Start 435: ThermalPipe2D
435/677 Test #435: ThermalPipe2D
.......................................
Passed    0.19 sec
      Start 436: ThermalPipe3D
436/677 Test #436: ThermalPipe3D
.......................................
Passed    1.39 sec
      Start 437: ThermoElectric
437/677 Test #437: ThermoElectric
.......................................   Passed
    0.24 sec
      Start 438: TimeAdapt
438/677 Test #438: TimeAdapt
.......................................
Passed    1.35 sec
      Start 439: TimeFunc
439/677 Test #439: TimeFunc
.......................................
Passed    0.80 sec
      Start 440: TransientCostFourHeaters
440/677 Test #440: TransientCostFourHeaters
.............................   Passed    0.78
sec
      Start 441: TravellingHeater
441/677 Test #441: TravellingHeater
.......................................   Passed
1.80 sec
      Start 442: TravellingHeater2
442/677 Test #442: TravellingHeater2
.......................................   Passed
2.43 sec
      Start 443: UMAT_StVenant_2D
```

```
887  443/677 Test #443: UMAT_StVenant_2D
     ...........................................   Passed
     0.49 sec
888          Start 444: UMAT_StVenant_axials
889  444/677 Test #444: UMAT_StVenant_axials
     .......................................   Passed
     0.26 sec
890          Start 445: UMAT_linear_isotropic_2D
891  445/677 Test #445: UMAT_linear_isotropic_2D
     ................................   Passed    0.23
     sec
892          Start 446: VectorHelmholtzWaveguide
893  446/677 Test #446: VectorHelmholtzWaveguide
     ................................   Passed    3.58
     sec
894          Start 447: VectorHelmholtzWaveguide2
895  447/677 Test #447: VectorHelmholtzWaveguide2
     ...............................   Passed    5.12
     sec
896          Start 448: VectorHelmholtzWaveguide3
897  448/677 Test #448: VectorHelmholtzWaveguide3
     ...............................   Passed    0.55
     sec
898          Start 449: VectorHelmholtzWaveguide4
899  449/677 Test #449: VectorHelmholtzWaveguide4
     ...............................   Passed    1.37
     sec
900          Start 450: VectorHelmholtzWaveguide5
901  450/677 Test #450: VectorHelmholtzWaveguide5
     ...............................   Passed    0.73
     sec
902          Start 451: ViscoElasticMaxwell
903  451/677 Test #451: ViscoElasticMaxwell
     ......................................   Passed
     9.77 sec
904          Start 452: WaveEqu
905  452/677 Test #452: WaveEqu
     .................................................
     Passed    0.37 sec
906          Start 453: WaveEquEigen
907  453/677 Test #453: WaveEquEigen
     ...............................................
     Passed    0.18 sec
908          Start 454: WeightComputation
909  454/677 Test #454: WeightComputation
     ..........................................   Passed
     0.26 sec
```

```
       Start 455: WinkelBmPoissonCgIlu0_np2
455/677 Test #455: WinkelBmPoissonCgIlu0_np2
...............................     Passed    1.08
sec
       Start 456: WinkelBmPoissonCgIlu0_np8
456/677 Test #456: WinkelBmPoissonCgIlu0_np8
..................................***Failed    0.13
sec
       Start 457: WinkelBmPoissonIdrsIlu0_np2
457/677 Test #457: WinkelBmPoissonIdrsIlu0_np2
.............................     Passed    0.83 sec
       Start 458: WinkelBmPoissonIdrsIlu0_np8
458/677 Test #458: WinkelBmPoissonIdrsIlu0_np8
...............................***Failed    0.10 sec
       Start 459: WinkelPartitionMetis_np8
459/677 Test #459: WinkelPartitionMetis_np8
..................................***Failed    0.08
sec
       Start 460: WinkelPartitionMetisConnect_np8
460/677 Test #460: WinkelPartitionMetisConnect_np8
...........................***Failed    0.12 sec
       Start 461: WinkelPartitionMetisRec_np8
461/677 Test #461: WinkelPartitionMetisRec_np8
..............................***Failed    0.12 sec
       Start 462: WinkelPartitionRecursive_np8
462/677 Test #462: WinkelPartitionRecursive_np8
..............................***Failed    0.05 sec
       Start 463:
WinkelPartitionRecursiveHaloBC_np8
463/677 Test #463:
WinkelPartitionRecursiveHaloBC_np8
......................***Failed    0.06 sec
       Start 464:
WinkelPartitionRecursiveLevel2_np8
464/677 Test #464:
WinkelPartitionRecursiveLevel2_np8
......................***Failed    0.06 sec
       Start 465: WinkelPartitionUniform_np4
465/677 Test #465: WinkelPartitionUniform_np4
.............................     Passed    0.40 sec
       Start 466: WinkelPartitionUniformHaloBC_np4
466/677 Test #466: WinkelPartitionUniformHaloBC_np4
.......................     Passed    0.42 sec
       Start 467: WinkelPartitionUniformLevel2_np4
467/677 Test #467: WinkelPartitionUniformLevel2_np4
........................     Passed    0.68 sec
       Start 468: WinkelPoissonMetisKwayDual
```

```
468/677 Test #468: WinkelPoissonMetisKwayDual
..............................       Passed    12.15 sec
        Start 469: WinkelPoissonMetisKwayDual_np2
469/677 Test #469: WinkelPoissonMetisKwayDual_np2
..........................       Passed    11.02 sec
        Start 470: WinkelPoissonMetisKwayDual_np4
470/677 Test #470: WinkelPoissonMetisKwayDual_np4
.........................       Passed     8.20 sec
        Start 471: WinkelPoissonMetisKwayDual_np8
471/677 Test #471: WinkelPoissonMetisKwayDual_np8
..........................***Failed     0.09 sec
        Start 472: WinkelPoissonMetisKwayNodal_np2
472/677 Test #472: WinkelPoissonMetisKwayNodal_np2
........................       Passed     8.16 sec
        Start 473: WinkelPoissonMetisKwayNodal_np4
473/677 Test #473: WinkelPoissonMetisKwayNodal_np4
........................       Passed     6.41 sec
        Start 474: WinkelPoissonMetisKwayNodal_np8
474/677 Test #474: WinkelPoissonMetisKwayNodal_np8
........................***Failed     0.11 sec
        Start 475:
WinkelPoissonPartitionRecursive_np8
475/677 Test #475:
WinkelPoissonPartitionRecursive_np8
....................***Failed     0.05 sec
        Start 476:
WinkelPoissonPartitionUniform_np4
476/677 Test #476:
WinkelPoissonPartitionUniform_np4
....................       Passed     6.37 sec
        Start 477: Zirka
477/677 Test #477: Zirka
..........................................................
   Passed    5.52 sec
        Start 478: adaptivity1
478/677 Test #478: adaptivity1
.......................................
Passed    0.28 sec
        Start 479: adaptivity2
479/677 Test #479: adaptivity2
.......................................
Passed    0.25 sec
        Start 480: adaptivity3
480/677 Test #480: adaptivity3
.......................................
Passed    0.39 sec
        Start 481: adaptivity4
```

```
481/677 Test #481: adaptivity4
....................................................
Passed    0.25 sec
        Start 482: adaptivity5
482/677 Test #482: adaptivity5
....................................................
Passed    0.27 sec
        Start 483: adv_diff1
483/677 Test #483: adv_diff1
....................................................
Passed    0.38 sec
        Start 484: adv_diff2
484/677 Test #484: adv_diff2
....................................................
Passed    0.42 sec
        Start 485: adv_diff3
485/677 Test #485: adv_diff3
....................................................
Passed    0.99 sec
        Start 486: adv_diff4
486/677 Test #486: adv_diff4
....................................................
Passed    1.47 sec
        Start 487: amultg
487/677 Test #487: amultg
........................................................
  Passed    0.56 sec
        Start 488: amultg2
488/677 Test #488: amultg2
......................................................
Passed    0.34 sec
        Start 489: beam-springs
489/677 Test #489: beam-springs
....................................................
Passed    0.45 sec
        Start 490: bentonite
490/677 Test #490: bentonite
....................................................
Passed    0.18 sec
        Start 491: bodydir
491/677 Test #491: bodydir
........................................................
Passed    0.17 sec
        Start 492: bodydir2
492/677 Test #492: bodydir2
........................................................
Passed    1.38 sec
```

```
        Start 493: bodyload
493/677 Test #493: bodyload
.................................................
Passed    0.15 sec
        Start 494: buckling
494/677 Test #494: buckling
.................................................
Passed    0.22 sec
        Start 495: channel_v2f
495/677 Test #495: channel_v2f
.................................................
Passed    2.33 sec
        Start 496: circuits2D_harmonic_foil
496/677 Test #496: circuits2D_harmonic_foil
..................................   Passed    0.29
sec
        Start 497: circuits2D_harmonic_massive
497/677 Test #497: circuits2D_harmonic_massive
.............................   Passed    0.25 sec
        Start 498: circuits2D_harmonic_stranded
498/677 Test #498: circuits2D_harmonic_stranded
...........................   Passed    0.19 sec
        Start 499:
circuits2D_harmonic_stranded_explicit_coil_resistan
ce
499/677 Test #499:
circuits2D_harmonic_stranded_explicit_coil_resistan
ce ...   Passed    0.19 sec
        Start 500:
circuits2D_harmonic_stranded_homogenization
500/677 Test #500:
circuits2D_harmonic_stranded_homogenization
.............   Passed    0.22 sec
        Start 501: circuits2D_scan_harmonics
501/677 Test #501: circuits2D_scan_harmonics
...............................   Passed    0.60
sec
        Start 502: circuits2D_transient_foil
502/677 Test #502: circuits2D_transient_foil
.................................   Passed    0.32
sec
        Start 503: circuits2D_transient_massive
503/677 Test #503: circuits2D_transient_massive
............................   Passed    0.25 sec
        Start 504: circuits2D_transient_stranded
504/677 Test #504: circuits2D_transient_stranded
...........................   Passed    0.31 sec
```

```
        Start 505: circuits2D_with_hysteresis
505/677 Test #505: circuits2D_with_hysteresis
.............................      Passed      6.08 sec
        Start 506: circuits2D_with_hysteresis_axi
506/677 Test #506: circuits2D_with_hysteresis_axi
.........................       Passed      8.48 sec
        Start 507: circuits_harmonic_foil
507/677 Test #507: circuits_harmonic_foil
...................................      Passed      5.99
sec
        Start 508: circuits_harmonic_massive
508/677 Test #508: circuits_harmonic_massive
.............................      Passed      0.49
sec
        Start 509: circuits_harmonic_stranded
509/677 Test #509: circuits_harmonic_stranded
.............................      Passed      4.56 sec
        Start 510:
circuits_harmonic_stranded_homogenization
510/677 Test #510:
circuits_harmonic_stranded_homogenization
...............      Passed      5.20 sec
        Start 511: circuits_transient_foil
511/677 Test #511: circuits_transient_foil
...............................       Passed      5.27
sec
        Start 512: circuits_transient_massive
512/677 Test #512: circuits_transient_massive
.............................      Passed      2.79 sec
        Start 513: circuits_transient_stranded
513/677 Test #513: circuits_transient_stranded
.............................       Passed      3.62 sec
        Start 514: cmultg
514/677 Test #514: cmultg
...................................................
   Passed      1.76 sec
        Start 515: coating
515/677 Test #515: coating
...................................................
Passed      1.48 sec
        Start 516: coordinate_transform
516/677 Test #516: coordinate_transform
.................................       Passed
0.20 sec
        Start 517: current
```

```
517/677 Test #517: current
.................................................
Passed    0.26 sec
        Start 518: current_heat_control
518/677 Test #518: current_heat_control
..................................   Passed
0.34 sec
        Start 519: diffuser_sa
519/677 Test #519: diffuser_sa
............................................
Passed    3.39 sec
        Start 520: diffuser_sst
520/677 Test #520: diffuser_sst
...........................................
Passed    2.64 sec
        Start 521: diffuser_v2f
521/677 Test #521: diffuser_v2f
...........................................
Passed    3.06 sec
        Start 522: el_adaptivity
522/677 Test #522: el_adaptivity
............................................
Passed    0.25 sec
        Start 523: elasticity
523/677 Test #523: elasticity
..............................................
Passed    0.38 sec
        Start 524: elasticity_with_springs
524/677 Test #524: elasticity_with_springs
...................................   Passed    0.30
sec
        Start 525: elstat
525/677 Test #525: elstat
...............................................
  Passed    1.59 sec
        Start 526: elstat_infty
526/677 Test #526: elstat_infty
...........................................
Passed    1.04 sec
        Start 527: elstat_source
527/677 Test #527: elstat_source
...........................................
Passed    0.18 sec
        Start 528: fluxsolver
528/677 Test #528: fluxsolver
..............................................
Passed    0.19 sec
```

```
          Start 529: fluxsolver2
529/677 Test #529: fluxsolver2
..................................................
Passed    0.15 sec
          Start 530: fluxsolver3
530/677 Test #530: fluxsolver3
..................................................
Passed    0.23 sec
          Start 531: freesurf
531/677 Test #531: freesurf
....................................................
Passed    0.55 sec
          Start 532: freesurf_axi
532/677 Test #532: freesurf_axi
..................................................
Passed    0.60 sec
          Start 533: freesurf_int
533/677 Test #533: freesurf_int
..................................................
Passed    0.46 sec
          Start 534: freesurf_ltd
534/677 Test #534: freesurf_ltd
..................................................
Passed    1.92 sec
          Start 535: freesurf_maxd
535/677 Test #535: freesurf_maxd
..............................................
Passed    0.74 sec
          Start 536: freesurf_maxd_np2
536/677 Test #536: freesurf_maxd_np2
.........................................   Passed
0.72 sec
          Start 537: freesurf_maxd_np4
537/677 Test #537: freesurf_maxd_np4
..........................................   Passed
0.85 sec
          Start 538: freesurf_maxd_local
538/677 Test #538: freesurf_maxd_local
...........................................   Passed
0.77 sec
          Start 539: freesurf_maxd_local_np2
539/677 Test #539: freesurf_maxd_local_np2
.................................   Passed    0.78
sec
          Start 540: freesurf_maxd_local_np4
```

```
540/677 Test #540: freesurf_maxd_local_np4
..............................     Passed     0.87
sec
        Start 541: freesurf_sloshing_2d
541/677 Test #541: freesurf_sloshing_2d
.................................     Passed
2.53 sec
        Start 542: fsi_beam
542/677 Test #542: fsi_beam
.........................................
Passed    0.72 sec
        Start 543: fsi_beam_nodalforce
543/677 Test #543: fsi_beam_nodalforce
......................................     Passed
0.81 sec
        Start 544: fsi_beam_optimize
544/677 Test #544: fsi_beam_optimize
.......................................     Passed
2.28 sec
        Start 545: fsi_box
545/677 Test #545: fsi_box
.........................................
Passed    1.14 sec
        Start 546: fsi_box2
546/677 Test #546: fsi_box2
.........................................
Passed    0.83 sec
        Start 547: geomstiff
547/677 Test #547: geomstiff
.........................................
Passed    0.24 sec
        Start 548: gmultg
548/677 Test #548: gmultg
...........................................
  Passed    0.24 sec
        Start 549: heateq
549/677 Test #549: heateq
.........................................
  Passed    0.25 sec
        Start 550: heateq_bdf2
550/677 Test #550: heateq_bdf2
......................................
Passed    0.22 sec
        Start 551: heateq_bdf3
551/677 Test #551: heateq_bdf3
......................................
Passed    0.21 sec
```

```
        Start 552: heateq_infty
552/677 Test #552: heateq_infty
........................................
Passed    1.09 sec
        Start 553: heateq_infty_np2
553/677 Test #553: heateq_infty_np2
.......................................   Passed
0.91 sec
        Start 554: heateq_infty_np4
554/677 Test #554: heateq_infty_np4
.......................................   Passed
1.15 sec
        Start 555: heateq_newmark
555/677 Test #555: heateq_newmark
..........................................   Passed
    0.19 sec
        Start 556: heateq_newmark_global
556/677 Test #556: heateq_newmark_global
....................................   Passed
0.24 sec
        Start 557: heateq_resmode
557/677 Test #557: heateq_resmode
..........................................   Passed
    0.44 sec
        Start 558: heateq_spline_table
558/677 Test #558: heateq_spline_table
.....................................   Passed
0.43 sec
        Start 559: heateq_steady_start
559/677 Test #559: heateq_steady_start
......................................   Passed
0.27 sec
        Start 560: levelset1
560/677 Test #560: levelset1
...........................................
Passed    2.01 sec
        Start 561: levelset2
561/677 Test #561: levelset2
...........................................
Passed    1.03 sec
        Start 562: levelset3
562/677 Test #562: levelset3
...........................................
Passed    4.61 sec
        Start 563: levelset3b
```

```
1127  563/677 Test #563: levelset3b
      ..............................................
      Passed    3.89 sec
1128          Start 564: linearsolvers
1129  564/677 Test #564: linearsolvers
      .........................................
      Passed    0.25 sec
1130          Start 565: linearsolvers_cmplx
1131  565/677 Test #565: linearsolvers_cmplx
      ...................................   Passed
      0.63 sec
1132          Start 566: marangoni
1133  566/677 Test #566: marangoni
      ...............................................
      Passed    0.20 sec
1134          Start 567: mgdyn2D_compute_average_b
1135  567/677 Test #567: mgdyn2D_compute_average_b
      ..................................   Passed    0.46
      sec
1136          Start 568: mgdyn2D_compute_bodycurrent
1137  568/677 Test #568: mgdyn2D_compute_bodycurrent
      ..............................   Passed    0.48 sec
1138          Start 569: mgdyn2D_compute_complex_power
1139  569/677 Test #569: mgdyn2D_compute_complex_power
      ..........................   Passed    0.46 sec
1140          Start 570: mgdyn2D_em
1141  570/677 Test #570: mgdyn2D_em
      ..............................................
      Passed    2.64 sec
1142          Start 571: mgdyn2D_em_conforming
1143  571/677 Test #571: mgdyn2D_em_conforming
      .......................................   Passed
      0.63 sec
1144          Start 572: mgdyn2D_em_harmonic
1145  572/677 Test #572: mgdyn2D_em_harmonic
      ........................................   Passed
      0.79 sec
1146          Start 573:
      mgdyn2D_harmonic_anisotropic_permeability
1147  573/677 Test #573:
      mgdyn2D_harmonic_anisotropic_permeability
      ...............   Passed    0.22 sec
1148          Start 574: mgdyn2D_pm
1149  574/677 Test #574: mgdyn2D_pm
      ...............................................
      Passed    0.26 sec
```

```
       Start 575:
mgdyn2D_scan_homogenization_elementary_solutions
575/677 Test #575:
mgdyn2D_scan_homogenization_elementary_solutions
........   Passed    6.85 sec
       Start 576: mgdyn_3phase
576/677 Test #576: mgdyn_3phase
.............................................
Passed    3.45 sec
       Start 577: mgdyn_airgap
577/677 Test #577: mgdyn_airgap
.............................................
Passed    0.22 sec
       Start 578: mgdyn_airgap2
578/677 Test #578: mgdyn_airgap2
.............................................
Passed    0.23 sec
       Start 579: mgdyn_airgap_force
579/677 Test #579: mgdyn_airgap_force
.......................................   Passed
14.72 sec
       Start 580: mgdyn_airgap_force_np2
580/677 Test #580: mgdyn_airgap_force_np2
......................................   Passed    8.49
sec
       Start 581: mgdyn_airgap_harmonic
581/677 Test #581: mgdyn_airgap_harmonic
......................................   Passed
0.27 sec
       Start 582: mgdyn_angular_steady
582/677 Test #582: mgdyn_angular_steady
.......................................   Passed
3.48 sec
       Start 583: mgdyn_angular_steady_np2
583/677 Test #583: mgdyn_angular_steady_np2
.....................................   Passed    2.33
sec
       Start 584: mgdyn_anisotropic_cond
584/677 Test #584: mgdyn_anisotropic_cond
......................................   Passed    4.33
sec
       Start 585: mgdyn_anisotropic_rel
585/677 Test #585: mgdyn_anisotropic_rel
.......................................   Passed
1.62 sec
       Start 586: mgdyn_bh
```

```
1173  586/677 Test #586: mgdyn_bh
      ............................................
      Passed   12.89 sec
1174          Start 587: mgdyn_bh_gauge
1175  587/677 Test #587: mgdyn_bh_gauge
      .......................................   Passed
         4.39 sec
1176          Start 588: mgdyn_bh_gauge_np2
1177  588/677 Test #588: mgdyn_bh_gauge_np2
      ......................................   Passed
      2.97 sec
1178          Start 589: mgdyn_bh_gauge2
1179  589/677 Test #589: mgdyn_bh_gauge2
      ......................................   Passed
         4.00 sec
1180          Start 590: mgdyn_faraday_disc
1181  590/677 Test #590: mgdyn_faraday_disc
      .......................................   Passed
      36.93 sec
1182          Start 591: mgdyn_faraday_disc_transient
1183  591/677 Test #591: mgdyn_faraday_disc_transient
      ...............................   Passed   78.64 sec
1184          Start 592: mgdyn_faraday_wheel
1185  592/677 Test #592: mgdyn_faraday_wheel
      ......................................   Passed
      47.96 sec
1186          Start 593: mgdyn_harmonic
1187  593/677 Test #593: mgdyn_harmonic
      ...........................................   Passed
         9.58 sec
1188          Start 594: mgdyn_harmonic_loss
1189  594/677 Test #594: mgdyn_harmonic_loss
      .......................................   Passed
      8.03 sec
1190          Start 595: mgdyn_harmonic_wire
1191  595/677 Test #595: mgdyn_harmonic_wire
      .......................................   Passed
      6.28 sec
1192          Start 596: mgdyn_lamstack_lowfreq_harmonic
1193  596/677 Test #596: mgdyn_lamstack_lowfreq_harmonic
      ...........................   Passed    9.02 sec
1194          Start 597: mgdyn_lamstack_lowfreq_transient
1195  597/677 Test #597: mgdyn_lamstack_lowfreq_transient
      ........................   Passed    9.88 sec
1196          Start 598: mgdyn_lamstack_widefreq_harmonic
1197  598/677 Test #598: mgdyn_lamstack_widefreq_harmonic
      ........................   Passed    5.19 sec
```

```
        Start 599: mgdyn_nodalforce2d
599/677 Test #599: mgdyn_nodalforce2d
.................................         Passed
0.32 sec
        Start 600: mgdyn_steady
600/677 Test #600: mgdyn_steady
.......................................
Passed    4.80 sec
        Start 601: mgdyn_steady_2ndorder
601/677 Test #601: mgdyn_steady_2ndorder
...................................         Passed
1.01 sec
        Start 602: mgdyn_steady_periodic
602/677 Test #602: mgdyn_steady_periodic
...................................         Passed
5.50 sec
        Start 603: mgdyn_steady_piolaversion
603/677 Test #603: mgdyn_steady_piolaversion
...............................         Passed    0.64
sec
        Start 604: mgdyn_steady_plate
604/677 Test #604: mgdyn_steady_plate
......................................         Passed
1.34 sec
        Start 605: mgdyn_steady_wire
605/677 Test #605: mgdyn_steady_wire
.......................................         Passed
2.12 sec
        Start 606: mgdyn_steady_wire2
606/677 Test #606: mgdyn_steady_wire2
......................................         Passed
6.42 sec
        Start 607: mgdyn_steady_wire_conforming
607/677 Test #607: mgdyn_steady_wire_conforming
...........................         Passed    1.30 sec
        Start 608: mgdyn_steady_wire_periodic
608/677 Test #608: mgdyn_steady_wire_periodic
...............................         Passed    8.17 sec
        Start 609: mgdyn_stump_jfix
609/677 Test #609: mgdyn_stump_jfix
..........................................         Passed
4.20 sec
        Start 610: mgdyn_stump_jfix2
610/677 Test #610: mgdyn_stump_jfix2
.......................................         Passed
3.98 sec
        Start 611: mgdyn_torus
```

```
611/677 Test #611: mgdyn_torus
..............................................
Passed    3.21 sec
        Start 612: mgdyn_torus_np2
612/677 Test #612: mgdyn_torus_np2
........................................        Passed
    2.30 sec
        Start 613: mgdyn_torus_np4
613/677 Test #613: mgdyn_torus_np4
........................................        Passed
    1.72 sec
        Start 614: mgdyn_torus_harmonic
614/677 Test #614: mgdyn_torus_harmonic
.....................................        Passed
8.58 sec
        Start 615: mgdyn_transient
615/677 Test #615: mgdyn_transient
.....................................        Passed
   12.10 sec
        Start 616: mgdyn_transient_loss
616/677 Test #616: mgdyn_transient_loss
....................................        Passed
13.39 sec
        Start 617: mhd
617/677 Test #617: mhd
...................................................
..    Passed    1.08 sec
        Start 618: mhd2
618/677 Test #618: mhd2
...................................................
.    Passed    1.29 sec
        Start 619: multimesh
619/677 Test #619: multimesh
............................................
Passed    0.35 sec
        Start 620: normals
620/677 Test #620: normals
..............................................
Passed    0.16 sec
        Start 621: passive
621/677 Test #621: passive
..............................................
Passed    0.35 sec
        Start 622: periodic1
622/677 Test #622: periodic1
..............................................
Passed    0.20 sec
```

```
        Start 623: periodic2
623/677 Test #623: periodic2
.........................................
Passed    0.19 sec
        Start 624: periodic3
624/677 Test #624: periodic3
.........................................
Passed    0.22 sec
        Start 625: periodic_explicit
625/677 Test #625: periodic_explicit
.......................................    Passed
0.58 sec
        Start 626: periodic_homogenize
626/677 Test #626: periodic_homogenize
......................................    Passed
0.29 sec
        Start 627: periodic_nonconforming
627/677 Test #627: periodic_nonconforming
...................................    Passed    0.17
sec
        Start 628: periodic_offset
628/677 Test #628: periodic_offset
.........................................    Passed
   0.19 sec
        Start 629: periodic_offset2
629/677 Test #629: periodic_offset2
........................................    Passed
0.44 sec
        Start 630: periodic_rot
630/677 Test #630: periodic_rot
......................................
Passed    0.18 sec
        Start 631: piezo
631/677 Test #631: piezo
..............................................
  Passed    0.23 sec
        Start 632: plates
632/677 Test #632: plates
...............................................
  Passed    0.16 sec
        Start 633: platesEigen
633/677 Test #633: platesEigen
.........................................
Passed    0.38 sec
        Start 634: pmultg
```

```
634/677 Test #634: pmultg
...................................................
    Passed    1.62 sec
        Start 635: pointdir
635/677 Test #635: pointdir
.................................................
Passed    0.20 sec
        Start 636: pointload
636/677 Test #636: pointload
.................................................
Passed    0.19 sec
        Start 637: pointload2
637/677 Test #637: pointload2
.................................................
Passed    1.01 sec
        Start 638: poisson_steady_conforming
638/677 Test #638: poisson_steady_conforming
..............................   Passed    0.33
sec
        Start 639: poisson_steady_conforming_anti
639/677 Test #639: poisson_steady_conforming_anti
.........................   Passed    0.29 sec
        Start 640:
poisson_transient_conforming_anti
640/677 Test #640:
poisson_transient_conforming_anti
.....................   Passed    0.23 sec
        Start 641:
poisson_transient_conforming_anti_np4
641/677 Test #641:
poisson_transient_conforming_anti_np4
..................   Passed    0.48 sec
        Start 642:
poisson_transient_conforming_anti_np8
642/677 Test #642:
poisson_transient_conforming_anti_np8
..................***Failed    0.04 sec
        Start 643: radiation
643/677 Test #643: radiation
.................................................
Passed    0.24 sec
        Start 644: radiation2
644/677 Test #644: radiation2
.................................................
Passed    0.30 sec
        Start 645: radiation2d
```

```
1291  645/677 Test #645: radiation2d
      ...............................................
      Passed    0.61 sec
1292          Start 646: radiation2dAA
1293  646/677 Test #646: radiation2dAA
      ............................................
      Passed    0.41 sec
1294          Start 647: radiation2dsymm
1295  647/677 Test #647: radiation2dsymm
      ...........................................   Passed
         0.21 sec
1296          Start 648: radiation3d
1297  648/677 Test #648: radiation3d
      ............................................
      Passed    0.71 sec
1298          Start 649: radiation_bin
1299  649/677 Test #649: radiation_bin
      ...........................................
      Passed    0.20 sec
1300          Start 650: radiation_dg
1301  650/677 Test #650: radiation_dg
      ...........................................
      Passed    0.26 sec
1302          Start 651: reload
1303  651/677 Test #651: reload
      ..................................................
         Passed    0.49 sec
1304          Start 652: reynolds1
1305  652/677 Test #652: reynolds1
      ..............................................
      Passed    2.09 sec
1306          Start 653: reynolds2
1307  653/677 Test #653: reynolds2
      .............................................
      Passed    0.53 sec
1308          Start 654: reynolds3
1309  654/677 Test #654: reynolds3
      ...............................................
      Passed    5.12 sec
1310          Start 655: reynolds3b
1311  655/677 Test #655: reynolds3b
      ..............................................
      Passed    3.09 sec
1312          Start 656: rgdblock
1313  656/677 Test #656: rgdblock
      ................................................
      Passed    0.97 sec
```

```
        Start 657: rot_aniso
657/677 Test #657: rot_aniso
..............................................
Passed    1.83 sec
        Start 658: rotflow
658/677 Test #658: rotflow
...............................................
Passed    0.51 sec
        Start 659: savescalars
659/677 Test #659: savescalars
.............................................
Passed    0.24 sec
        Start 660: savescalars_boundary
660/677 Test #660: savescalars_boundary
.................................      Passed
0.25 sec
        Start 661: savescalars_flux
661/677 Test #661: savescalars_flux
.....................................      Passed
0.19 sec
        Start 662: savescalars_many
662/677 Test #662: savescalars_many
.....................................      Passed
0.26 sec
        Start 663: savescalars_mask
663/677 Test #663: savescalars_mask
.....................................      Passed
0.18 sec
        Start 664: staged_sim
664/677 Test #664: staged_sim
...............................................
Passed    0.79 sec
        Start 665: streamlines
665/677 Test #665: streamlines
.............................................
Passed    0.29 sec
        Start 666: stress
666/677 Test #666: stress
..................................................
   Passed    0.27 sec
        Start 667: structmap
667/677 Test #667: structmap
.............................................
Passed    0.19 sec
        Start 668: structmap2
```

```
668/677 Test #668: structmap2
.............................................
Passed    0.58 sec
        Start 669: structmap3
669/677 Test #669: structmap3
.............................................
Passed    5.49 sec
        Start 670: structmap4
670/677 Test #670: structmap4
.............................................
Passed    0.41 sec
        Start 671: structmap5
671/677 Test #671: structmap5
.............................................
Passed    0.38 sec
        Start 672: structmap6
672/677 Test #672: structmap6
.............................................
Passed    0.41 sec
        Start 673: structmap_multilayer
673/677 Test #673: structmap_multilayer
......................................   Passed
0.20 sec
        Start 674: structmap_p2
674/677 Test #674: structmap_p2
..............................................
Passed    0.18 sec
        Start 675: tresca
675/677 Test #675: tresca
...................................................
   Passed    0.20 sec
        Start 676: vortex2d
676/677 Test #676: vortex2d
...............................................
Passed    0.62 sec
        Start 677: vortex3d
677/677 Test #677: vortex3d
...............................................
Passed    0.68 sec

95% tests passed, 34 tests failed out of 677

Label Time Summary:
2D             =   25.66 sec*proc (16 tests)
3D             =   27.93 sec*proc (7 tests)
aster          =    6.34 sec*proc (5 tests)
beam           =    0.33 sec*proc (2 tests)
```

```
benchmark          = 142.59 sec*proc (16 tests)
block              =  19.47 sec*proc (19 tests)
circuit_utils      =   0.20 sec*proc (1 test)
circuits           =  45.12 sec*proc (18 tests)
contact            = 121.70 sec*proc (24 tests)
dg                 =   0.54 sec*proc (3 tests)
elasticity         =  10.76 sec*proc (4 tests)
elasticsolve       = 205.20 sec*proc (43 tests)
eliminate          =   0.76 sec*proc (4 tests)
elmerice           = 149.56 sec*proc (1 test)
em-wave            =   6.37 sec*proc (4 tests)
extrude            =   2.49 sec*proc (3 tests)
fsi                =  22.22 sec*proc (13 tests)
gauge              =  11.36 sec*proc (3 tests)
harmonic           =  28.47 sec*proc (20 tests)
heateq             =  66.14 sec*proc (43 tests)
helmholtz          =   3.39 sec*proc (7 tests)
homogenization     =   5.41 sec*proc (2 tests)
hutiter            =   2.14 sec*proc (4 tests)
matc               =  48.13 sec*proc (30 tests)
mgdyn              = 225.30 sec*proc (28 tests)
mortar             =  48.78 sec*proc (2 tests)
namespace          =   3.06 sec*proc (7 tests)
parallel           = 104.06 sec*proc (90 tests)
param              =   0.19 sec*proc (1 test)
particle           =  22.33 sec*proc (14 tests)
plate              =   0.22 sec*proc (1 test)
quick              =  85.77 sec*proc (290 tests)
scanning           =   7.45 sec*proc (2 tests)
serial             = 1468.29 sec*proc (587 tests)
shell              =  60.58 sec*proc (18 tests)
slow               = 170.57 sec*proc (2 tests)
stranded           =   5.20 sec*proc (1 test)
threaded           =  77.90 sec*proc (6 tests)
transient          = 117.74 sec*proc (48 tests)
umat               =   0.98 sec*proc (3 tests)
useextrude         =   8.09 sec*proc (16 tests)
vector_element     =   9.54 sec*proc (13 tests)
viscoelastic       =   9.77 sec*proc (1 test)
whitney            = 305.42 sec*proc (57 tests)

Total Test time (real) = 1573.06 sec

The following tests FAILED:
        7 - AdvReactDB_np6 (Failed)
        9 - AdvReactDBmap_np6 (Failed)
       11 - AdvReactDG_np6 (Failed)
```

```
1411        127 - DisContBoundaryDoubleMortar_np8 (Failed)
1412        132 - DisContBoundaryMortarCont_np8 (Failed)
1413        136 - DisContBoundaryMortarContElim_np8
       (Failed)
1414        140 - DisContBoundaryMortarJump_np8 (Failed)
1415        144 - DisContBoundaryMortarJumpB_np8 (Failed)
1416        148 - DisContBoundaryMortarJumpC_np8 (Failed)
1417        214 - Hybrid2dMeshPartitionCyl_np8 (Failed)
1418        215 - Hybrid2dMeshPartitionMetis_np8 (Failed)
1419        216 - Hybrid2dMeshPartitionMetisConnect_np8
       (Failed)
1420        222 - InternalPartitioning_np8 (Failed)
1421        224 - InternalPartitioning2_np6 (Failed)
1422        226 - InternalPartitioning3_np6 (Failed)
1423        253 - MazeMeshPartitionMetisContig_np6 (Failed)
1424        263 - ModelPDE (Failed)
1425        273 - MortarPoissonPartz3D_np6 (Failed)
1426        274 - MortarPoissonPartz3D_np8 (Failed)
1427        332 - PoissonDB_np8 (Failed)
1428        335 - PoissonDG_np8 (Failed)
1429        363 - RotatingBCPoisson3Daxial_np6 (Failed)
1430        456 - WinkelBmPoissonCgIlu0_np8 (Failed)
1431        458 - WinkelBmPoissonIdrsIlu0_np8 (Failed)
1432        459 - WinkelPartitionMetis_np8 (Failed)
1433        460 - WinkelPartitionMetisConnect_np8 (Failed)
1434        461 - WinkelPartitionMetisRec_np8 (Failed)
1435        462 - WinkelPartitionRecursive_np8 (Failed)
1436        463 - WinkelPartitionRecursiveHaloBC_np8
       (Failed)
1437        464 - WinkelPartitionRecursiveLevel2_np8
       (Failed)
1438        471 - WinkelPoissonMetisKwayDual_np8 (Failed)
1439        474 - WinkelPoissonMetisKwayNodal_np8 (Failed)
1440        475 - WinkelPoissonPartitionRecursive_np8
       (Failed)
1441        642 - poisson_transient_conforming_anti_np8
       (Faile
```

以上功能性测试出现失败的原因可能是由于进行单节点测试造成的。

3   性能测试

3.1   测试平台信息对比

	arm信息	x86信息。
操作系统	openEuler 22.03 LTS	openEuler 20.03 (LTS-SP1)
内核版本	Linux 5.10.0-60.18.0.50.oe2203.aarch64 aarch64	Linux 5.10.16.3-microsoft-standard-WSL2 x86_64

3.2   测试软件环境信息对比

	arm信息	x86信息
gcc	bisheng 2.1.0	gcc 7.3.0
mpi	hmpi1.1.1	openmpi-4.0.2
OpenBlas	0.3.6	0.3.6
Elmer	8.4	8.4

3.3   测试硬件性能信息对比

	arm信息	x86信息
cpu	Kunpeng 920	Intel(R) Core(TM) i5-9300H CPU @ 2.40GHz
核心数	32	4
内存	16 GB	8 GB
磁盘io	1.3 GB/s	400 MB/s
虚拟化	KVM	KVM

3.4   测试选择的案例：

Flow through a hole——确定声阻抗问题

问题包括找出流体在被迫流过孔时所面临的阻力。 流动阻力由孔上的压降与输入速度之比表示。 在微系统建模中，通常需要孔阻力来分析穿孔结构中的气体阻尼效应。 在此，基于单孔电阻，孔的贡献在穿孔结构上是均匀的。 对于 Elmer 中的均质化，使用特定的声阻抗来表示流动阻力。

文件具体内容如下：

```
***** ElmerGrid input file for structured grid
generation *****
Version = 210903
Coordinate System = Cartesian 2D
Subcell Divisions in 2D = 3 3
Subcell Limits 1 = 0 2.5 5 10
Subcell Limits 2 = 0 1 4 9
Material Structure in 2D
  1    1    3
  1    2    3
  1    1    3
End
Revolve Blocks = 1
```

```
13  Revolve Radius = -1
14  Materials Interval = 1 1
15  Boundary Definitions
16  ! type       out        int
17    1          2          -4          1
18    2          2          -3          1
19    3          2          -1          1
20    4          0          -3          1
21    5          0          -1          1
22    6          3          1           1
23  End
24  Numbering = Horizontal
25  Element Degree = 1
26  Element Innernodes = False
27  Triangles = False
28  Surface Elements = 750
29  Coordinate Ratios = 1
30  Minimum Element Divisions = 1 1
31  Element Ratios 1 = 1 1.5 1
32  Element Ratios 2 = 1 -1.35 3
33  Element Densities 1 = 1.3 1 1
34  Element Densities 2 = 4 2.4 1.8
```

impedance.sif 文件如下

```
 1  Check Keywords Warn
 2
 3  Header
 4    Mesh DB "." "hole"
 5  End
 6
 7  Simulation
 8    Coordinate System = Cartesian 3D
 9    Simulation Type = Steady State
10    Steady State Max Iterations = 1
11    Output File = "flow.result"
12    Post File = "flow.ep"
13  End
14
15  Body 1
16    Equation = 1
17    Material = 1
18  End
19
20  Equation 1
21    Active Solvers(3) = 1 2 3
```

```
22    NS Convect = False
23  End
24
25
26  Solver 1
27     Equation = Navier-Stokes
28     Variable = Flow Solution
29     Variable DOFs = 3
30     Linear System Solver = Iterative
31     Linear System Iterative Method = BiCGStab
32     Linear System Preconditioning = ILU0
33     Linear System Max Iterations = 200
34     Linear System Convergence Tolerance = 1.0e-08
35     Stabilize = True
36     Nonlinear System Convergence Tolerance = 1.0e-05
37     Nonlinear System Max Iterations = 1
38     Nonlinear System Newton After Iterations = 3
39     Nonlinear System Newton After Tolerance = 1.0e-08
40     Nonlinear System Relaxation Factor = 1.0
41     Steady State Convergence Tolerance = 1.0e-05
42  End
43
44  Solver 2
45    Exec Solver = After Timestep
46    Equation = Fluidic Force
47    Procedure  ="FluidicForce" "ForceCompute"
48    Calculate Viscous Force = True
49  End
50
51  Solver 3
52    Exec Solver = After All
53    Equation = SaveScalars
54    Procedure = "SaveData" "SaveScalars"
55    Filename = "flowdata.dat"
56    Save Variable 1 = Velocity 3
57    Save Coordinates(1,2) = 0.0 0.0
58  End
59
60  Material 1
61    Name = Air
62    Density = 1.293e-12
63    Viscosity = 1.67e-5
64  End
65
66  Boundary Condition 1
67    Target Boundaries = 4
68     Velocity 1 = 0.0
```

```
69      Velocity 2 = 0.0
70      Velocity 3 = 1.0e3
71      Calculate Fluidic Force = True
72 End
73
74 Boundary Condition 2
75   Target Boundaries(2) = 8 10
76     Velocity 2 = 0.0
77 End
78
79 Boundary Condition 3
80   Target Boundaries(4) = 1 2 3 7
81     Velocity 1 = 0.0
82     Velocity 2 = 0.0
83     Velocity 3 = 0.0
84 End
85
86 Boundary Condition 4
87   Target Boundaries(2) = 6 9
88     Velocity 1 = 0.0
89 End
90
91 Boundary Condition 5
92   Target Boundaries = 5
93   Pressure = 0.0
94 End
95
96 !End Of File
```

3.5   单线程

单线程运行测试时间对比（五次运行取平均值）

	SOLVER TOTAL TIME(CPU/s)	SOLVER TOTAL TIME(REAL/s)
arm64未优化	3.33	3.45
arm64	2.28	2.53
x86	2.64	2.76

3.6   多线程

多线程运行测试时间对比（五次运行取平均值）：

	线程数	SOLVER TOTAL TIME(CPU/s)	SOLVER TOTAL TIME(REAL/s)
arm64未优化	2	2.04	2.46
arm64	2	1.39	1.52
x86	2	1.7	1.73

3.7　性能对比
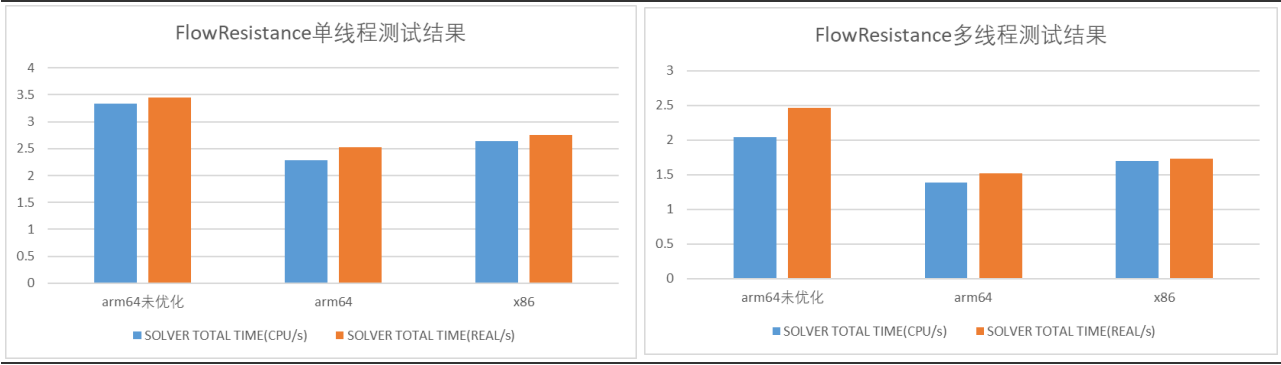
由以上两个图片可以看出amd经过优化后其性能得到明显提升，而随着线程数的增加，性能得到进一步提升。

3.8　其他测试样例

ElasticEigenValues测试结果		
arm64	单线程	双线程
	real 0m2.749s	real 0m1.156s
	user 0m2.202s	user 0m0.053s
	sys 0m0.120s	sys 0m0.103s
x86	real 0m2.832s	real 0m0.233s
	user 0m2.661s	user 0m0.479s
	sys 0m0.419s	sys 0m0.180s
arm未优化	real 0m5.583s	real 0m2.684s
	user 0m2.419s	user 0m2.600s
	sys 0m0.136s	sys 0m0.037s

3.9　测试总结

通过多个测试样例的对比可以发现，经过优化的amd平台的Elmer性能在单线程相较优化前性能提升约25%，多线程性能提升约20%，相比x86平台性能优化后单线程性能提升约9%，多线程性能提升约15%。

4　精度测试

4.1　所选测试案例

可以下载官方算例包"ElmerTutorialsFiles_nonGUI.tar.gz"后进行测试了，下载地址：https://sources.debian.org/data/non-free/e/elmer-doc/2014.02.06-1~bpo70%2B1/ElmerTutorialsFiles_nonGUI.tar.gz。

其文件目录结构如图所示：

```
1  /test/tutorials_files
```

```
 2  ├── AcousticWaves
 3  │   ├── domain.egf
 4  │   ├── ELMERSOLVER_STARTINFO
 5  │   └── helmholtz.sif
 6  ├── ArteryFlow
 7  │   ├── AddOneDim.f90
 8  │   ├── contra.grd
 9  │   ├── contra.sif
10  │   ├── ELMERSOLVER_STARTINFO
11  │   ├── Motion.f90
12  │   └── PostProcessingInstr.txt
13  ├── CapacitanceMatrix
14  │   ├── 4_holes.sif
15  │   ├── ELMERSOLVER_STARTINFO
16  │   └── mesh.FDNEUT
17  ├── CoatingProcess
18  │   ├── coat.grd
19  │   ├── coat.sif
20  │   └── ELMERSOLVER_STARTINFO
21  ├── ElasticBeam
22  │   ├── linear
23  │   │   ├── Beam.egf
24  │   │   ├── Beam.sif
25  │   │   └── ELMERSOLVER_STARTINFO
26  │   └── nonlinear
27  │       ├── Beam.egf
28  │       ├── Beam.sif
29  │       └── ELMERSOLVER_STARTINFO
30  ├── ElasticEigenValues
31  │   ├── eigen_values_aniso.sif
32  │   ├── eigen_values.sif
33  │   ├── ELMERSOLVER_STARTINFO
34  │   └── mesh.FDNEUT
35  ├── ElasticPlateLinear
36  │   ├── Draw
37  │   ├── ELMERSOLVER_STARTINFO
38  │   ├── simple_plate.grd
39  │   └── simple_plate.sif
40  ├── Electrostatics
41  │   ├── ELMERSOLVER_STARTINFO
42  │   ├── elmesh.grd
43  │   └── elstatics.sif
44  ├── FlowLinearRestriction
45  │   ├── AddMassFlow.f90
46  │   ├── ELMERSOLVER_STARTINFO
47  │   ├── mflow.grd
48  │   └── mflow.sif
```

```
49  ├── FlowResistance
50  │   ├── ELMERSOLVER_STARTINFO
51  │   ├── hole.grd
52  │   ├── impedance.sif
53  │   └── impedance_slip.sif
54  ├── FlowStepCompressible
55  │   ├── compress_step.sif
56  │   ├── ELMERSOLVER_STARTINFO
57  │   └── mesh.grd
58  ├── FlowStepIncompressible
59  │   ├── rectangles
60  │   │   ├── ELMERSOLVER_STARTINFO
61  │   │   ├── Step.grd
62  │   │   ├── StepMesh.gif
63  │   │   ├── StepRes.gif
64  │   │   └── Step.sif
65  │   └── triangles
66  │       ├── ELMERSOLVER_STARTINFO
67  │       ├── picmesh1.gif
68  │       ├── respic1.gif
69  │       ├── respic2.gif
70  │       ├── respic3.gif
71  │       ├── StepFlow.egf
72  │       └── StepFlow.sif
73  ├── FlowStreamlines
74  │   ├── ELMERSOLVER_STARTINFO
75  │   ├── step.grd
76  │   ├── streamlines.sif
77  │   └── StreamSolver.f90
78  ├── FluidStructureBeam
79  │   ├── displace.gif
80  │   ├── ELMERSOLVER_STARTINFO
81  │   ├── flowvect.gif
82  │   ├── fsi.grd
83  │   ├── fsi.sif
84  │   ├── FsiStuff.f90
85  │   ├── mesh.gif
86  │   └── pressure.gif
87  ├── InductionHeating
88  │   ├── crucible.grd
89  │   ├── crucible.sif
90  │   └── ELMERSOLVER_STARTINFO
91  ├── Microfluidic
92  │   ├── ELMERSOLVER_STARTINFO
93  │   ├── inject.sif
94  │   └── Tcross.grd
95  ├── PassiveElements
```

```
 96 │        ├── ELMERSOLVER_STARTINFO
 97 │        ├── temp.sif
 98 │        └── tmesh.grd
 99 ├── PoissonBEM
100 │   ├── ELMERSOLVER_STARTINFO
101 │   ├── heater.grd
102 │   └── PoissonBEM.sif
103 ├── RayleighBenard
104 │   ├── ELMERSOLVER_STARTINFO
105 │   ├── Mesh
106 │   │   ├── mesh.boundary
107 │   │   ├── mesh.elements
108 │   │   ├── mesh.header
109 │   │   └── mesh.nodes
110 │   └── RayleighBenard.sif
111 ├── RayleighBenardGUI
112 │   ├── box.grd
113 │   ├── case.ep
114 │   ├── case.sif
115 │   ├── ELMERSOLVER_STARTINFO
116 │   ├── mesh.boundary
117 │   ├── mesh.elements
118 │   ├── mesh.header
119 │   └── mesh.nodes
120 ├── Temperature1D
121 │   ├── 1dheat.grd
122 │   ├── 1dheat.sif
123 │   ├── ELMERSOLVER_STARTINFO
124 │   └── Poisson.f90
125 ├── TemperatureAngle
126 │   ├── ELMERSOLVER_STARTINFO
127 │   ├── TempDist.egf
128 │   ├── TempDist.sif
129 │   └── temperature.jpg
130 ├── TemperatureAngleGUI
131 │   ├── angle.grd
132 │   ├── case.ep
133 │   ├── case.sif
134 │   ├── ELMERSOLVER_STARTINFO
135 │   ├── mesh.boundary
136 │   ├── mesh.elements
137 │   ├── mesh.header
138 │   └── mesh.nodes
139 ├── TemperatureOperatorsplitting
140 │   ├── ELMERSOLVER_STARTINFO
141 │   ├── femlab-mesh
142 │   │   ├── mesh.boundary
```

```
143 │       │       ├── mesh.elements
144 │       │       ├── mesh.header
145 │       │       └── mesh.nodes
146 │       └── os-example.sif
147 ├── TemperatureRadiation
148 │       ├── ELMERSOLVER_STARTINFO
149 │       ├── radiation.grd
150 │       └── radiation.sif
151 ├── ThermalActuator
152 │       ├── ELMERSOLVER_STARTINFO
153 │       ├── ExportMesh.boundary
154 │       ├── ExportMesh.elem
155 │       ├── ExportMesh.header
156 │       ├── ExportMesh.node
157 │       ├── SOLVER.KEYWORDS
158 │       └── thermal_actuator.sif
159 └── 列表树.txt
160
161  32 directories, 126 files
```

此处可以选择 `test/tutorials_files/FlowResistance`

文件具体内容如下：

```
 1 ***** ElmerGrid input file for structured grid
   generation *****
 2 Version = 210903
 3 Coordinate System = Cartesian 2D
 4 Subcell Divisions in 2D = 3 3
 5 Subcell Limits 1 = 0 2.5 5 10
 6 Subcell Limits 2 = 0 1 4 9
 7 Material Structure in 2D
 8   1    1    3
 9   1    2    3
10   1    1    3
11 End
12 Revolve Blocks = 1
13 Revolve Radius = -1
14 Materials Interval = 1 1
15 Boundary Definitions
16 ! type      out      int
17   1        2        -4        1
18   2        2        -3        1
19   3        2        -1        1
20   4        0        -3        1
21   5        0        -1        1
```

```
22     6          3          1          1
23 End
24 Numbering = Horizontal
25 Element Degree = 1
26 Element Innernodes = False
27 Triangles = False
28 Surface Elements = 750
29 Coordinate Ratios = 1
30 Minimum Element Divisions = 1 1
31 Element Ratios 1 = 1 1.5 1
32 Element Ratios 2 = 1 -1.35 3
33 Element Densities 1 = 1.3 1 1
34 Element Densities 2 = 4 2.4 1.8
```

`impedance.sif` 文件如下

```
 1 Check Keywords Warn
 2
 3 Header
 4   Mesh DB "." "hole"
 5 End
 6
 7 Simulation
 8   Coordinate System = Cartesian 3D
 9   Simulation Type = Steady State
10   Steady State Max Iterations = 1
11   Output File = "flow.result"
12   Post File = "flow.ep"
13 End
14
15 Body 1
16   Equation = 1
17   Material = 1
18 End
19
20 Equation 1
21   Active Solvers(3) = 1 2 3
22   NS Convect = False
23 End
24
25
26 Solver 1
27   Equation = Navier-Stokes
28   Variable = Flow Solution
29   Variable DOFs = 3
30   Linear System Solver = Iterative
```

```
31      Linear System Iterative Method = BiCGStab
32      Linear System Preconditioning = ILU0
33      Linear System Max Iterations = 200
34      Linear System Convergence Tolerance = 1.0e-08
35      Stabilize = True
36      Nonlinear System Convergence Tolerance = 1.0e-05
37      Nonlinear System Max Iterations = 1
38      Nonlinear System Newton After Iterations = 3
39      Nonlinear System Newton After Tolerance = 1.0e-08
40      Nonlinear System Relaxation Factor = 1.0
41      Steady State Convergence Tolerance = 1.0e-05
42  End
43
44  Solver 2
45    Exec Solver = After Timestep
46    Equation = Fluidic Force
47    Procedure  ="FluidicForce" "ForceCompute"
48    Calculate Viscous Force = True
49  End
50
51  Solver 3
52    Exec Solver = After All
53    Equation = SaveScalars
54    Procedure = "SaveData" "SaveScalars"
55    Filename = "flowdata.dat"
56    Save Variable 1 = Velocity 3
57    Save Coordinates(1,2) = 0.0 0.0
58  End
59
60  Material 1
61    Name = Air
62    Density = 1.293e-12
63    Viscosity = 1.67e-5
64  End
65
66  Boundary Condition 1
67    Target Boundaries = 4
68     Velocity 1 = 0.0
69     Velocity 2 = 0.0
70     Velocity 3 = 1.0e3
71     Calculate Fluidic Force = True
72  End
73
74  Boundary Condition 2
75    Target Boundaries(2) = 8 10
76     Velocity 2 = 0.0
77  End
```

```
78
79  Boundary Condition 3
80    Target Boundaries(4) = 1 2 3 7
81     Velocity 1 = 0.0
82     Velocity 2 = 0.0
83     Velocity 3 = 0.0
84  End
85
86  Boundary Condition 4
87    Target Boundaries(2) = 6 9
88     Velocity 1 = 0.0
89  End
90
91  Boundary Condition 5
92    Target Boundaries = 5
93    Pressure = 0.0
94  End
95
96  !End Of File
```

4.2   获得对比数据

经过运行一下命令后有：

```
1  ElmerGrid 1 2 hole.grd -autoclean
2  time mpirun --allow-run-as-root -mca btl ^openib -np 1
   ElmerSolver
```

可以在flowdata.dat中得到测试数据，具体结果如下所示

arm数据

```
1      0.000000000000E+00      0.000000000000E+00
   0.000000000000E+00      0.000000000000E+00
   0.000000000000E+00      0.000000000000E+00
   2.500000000000E+01      0.000000000000E+00
   0.000000000000E+00      0.000000000000E+00
   0.000000000000E+00
```

x86数据

```
1    0.000000000000E+000   0.000000000000E+000
0.000000000000E+000   0.000000000000E+000
0.000000000000E+000   0.000000000000E+000
2.500000000000E+001   0.000000000000E+000
0.000000000000E+000   0.000000000000E+000
0.000000000000E+000
```

使用以上数据进行误差计算

```
1  x86 =
[0.000000000000E+00,0.000000000000E
+00,0.000000000000E+00,0.0000000000
00E+00,2.500000000000E+01,0.0000000
00000E+00,0.000000000000E+00]
2  arm =
[0.000000000000E+000,0.000000000000E+000,0.0000000000
0E+000,0.000000000000E+000,0.000000000000E+000,0.00000
0000000E+000,2.500000000000E+001,0.000000000000E+000,0
.000000000000E+000,0.000000000000E+000,0.000000000000E
+000]
3
4
5  for i in range(len(arm)):
6      if arm[i] == 0:
7          print(x86[i]-arm[i])
8      else:
9          print(abs((x86[i]-arm[i]) / arm[i]) * 100,
   '%')
```

4.3   误差运算结果

```
1  0.0
2  0.0
3  0.0
4  0.0
5  0.0
6  0.0
7  0.0 %
8  0.0
9  0.0
10  0.0
11  0.0
```

4.4 测试总结

所有运算结果偏差极小，几乎没有差别。