

# **Results for Ringleb Problem**

# Plots

p : points, l : line,

F : Fidkowski,

G: Galbraith, Orkwis and Bennek,

H: Huynh,

O: Oliver-Gooch and Porombka

W: van der Weide and Svard

Y: Yano and Darmofal

Z: Zhou and Wang

A solution by Ollivier-Gooch and Porombka.

Nominal Order: 4 , Taubench time 331

Different Domain: inner wall  $k = 1.4$  (instead of 1.5)

Triangular Mesh

{ #DOF, Error }

{ 46426,  $0.2192 * 10^{-5}$  }

Huynh's solution

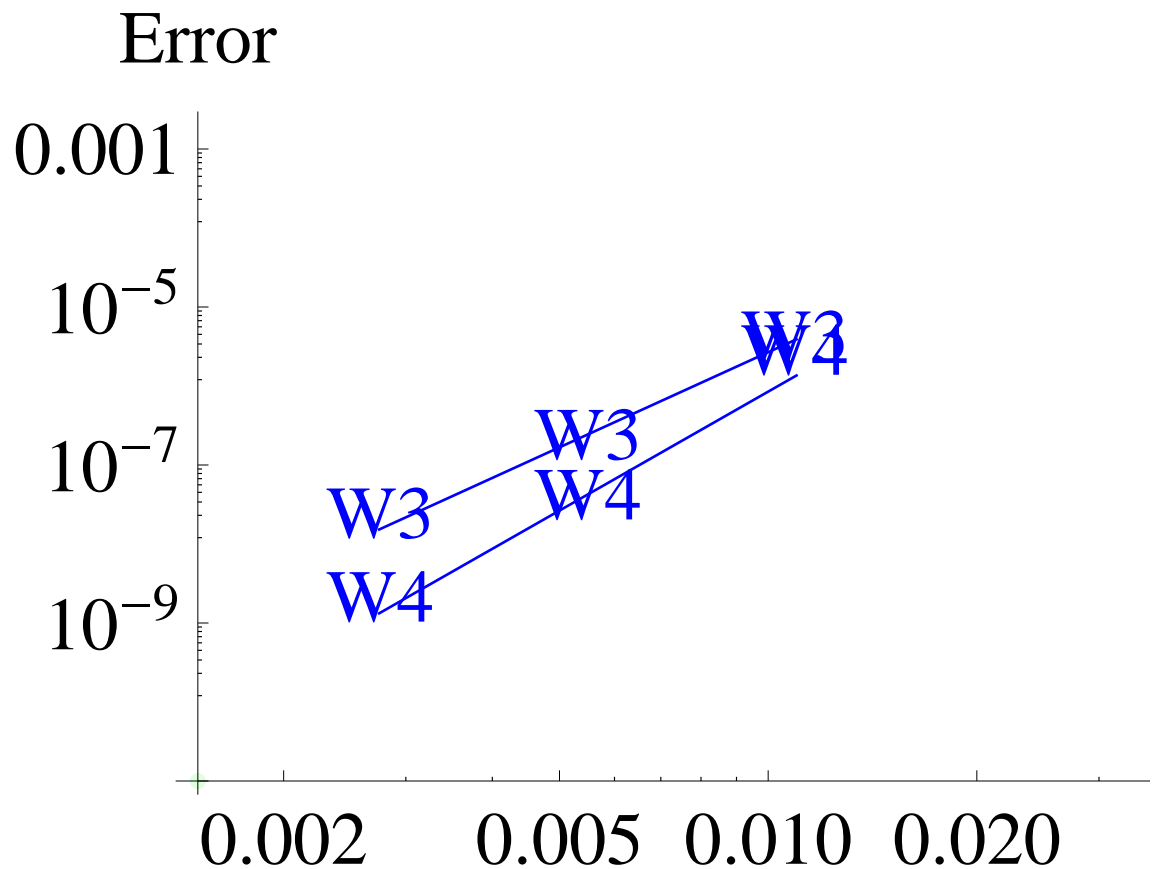
{  $96 \times 32 \times 16 = 49152$  ,  $0.2870 * 10^{-6}$  }

Is the length scale in van der Weide and Svard  
 $1/\text{Sqrt}[\text{\#DOF}]$  ?

```
ordAcc[w3]  
ordAcc[w4]  
Show[pr0, plw3, plw4]
```

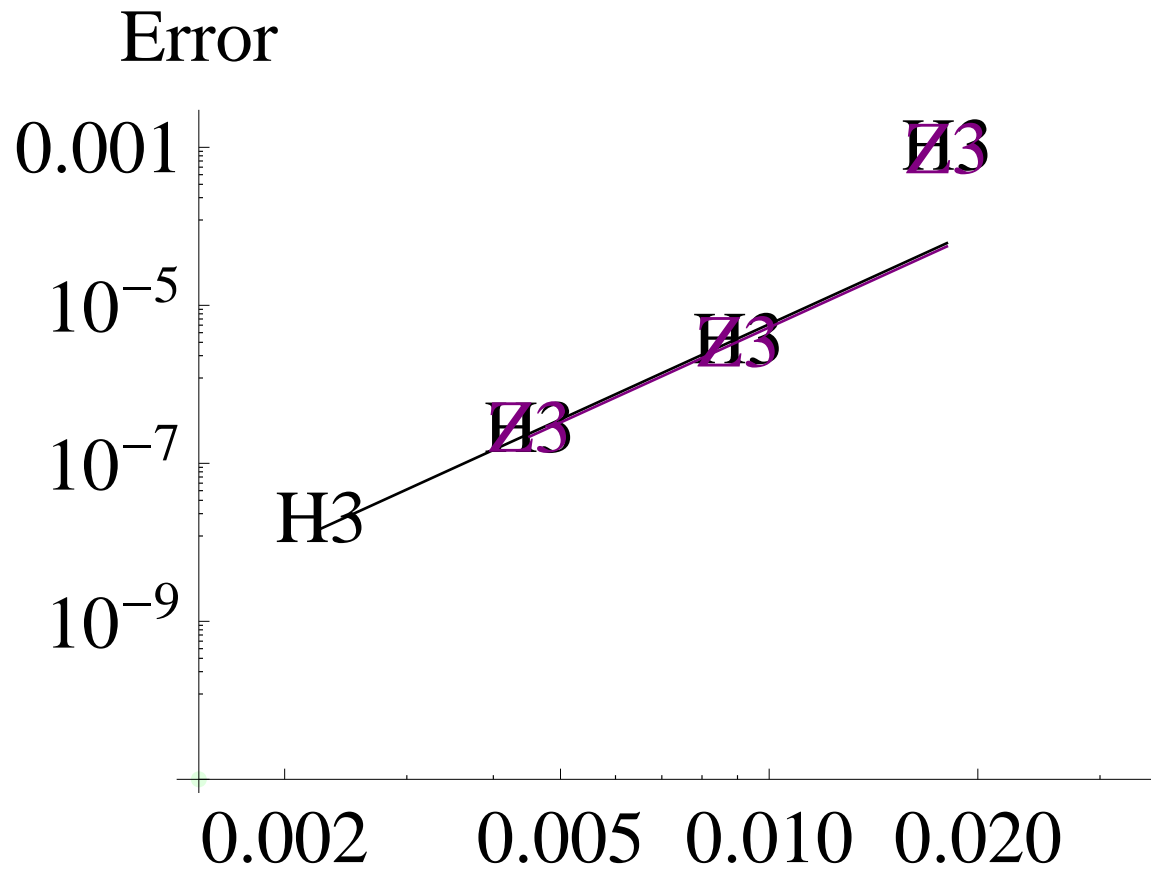
```
{4.17342, 3.31909}
```

```
{6.13376, 4.3158}
```



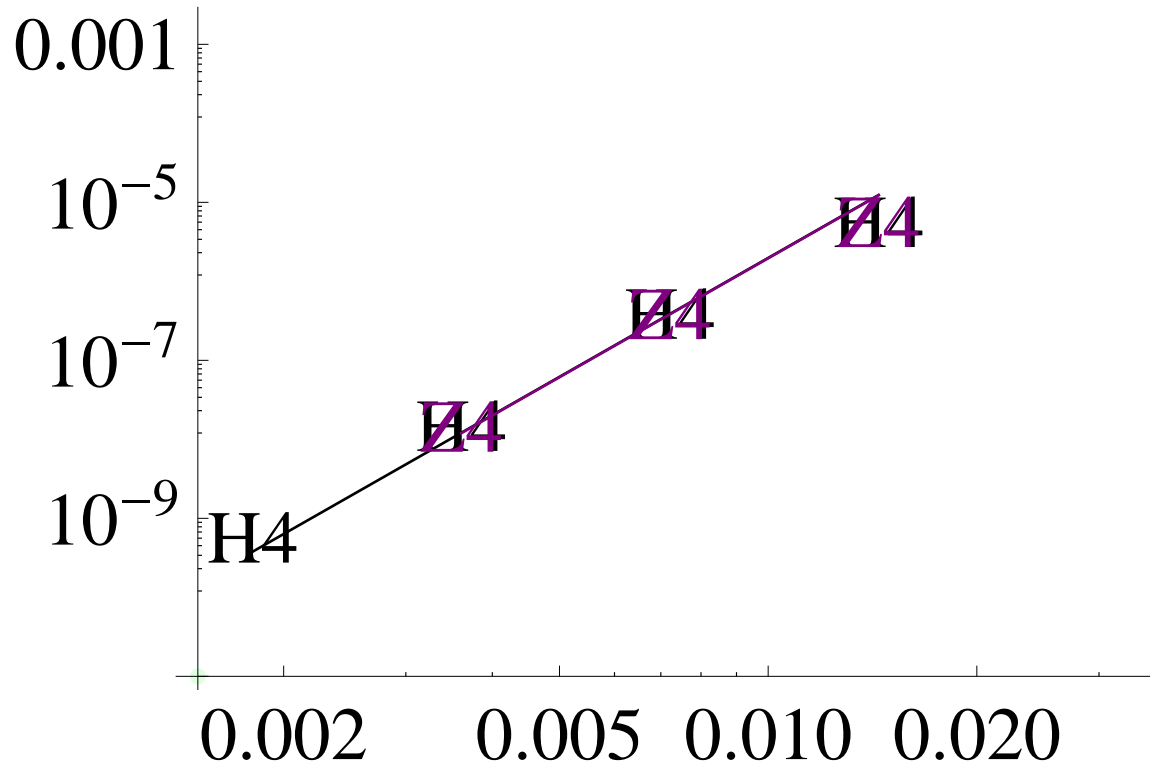
Results by Zhou and Wang and those by Huynh are essentially the same

```
Show[pr0, plh3, plz3]
```

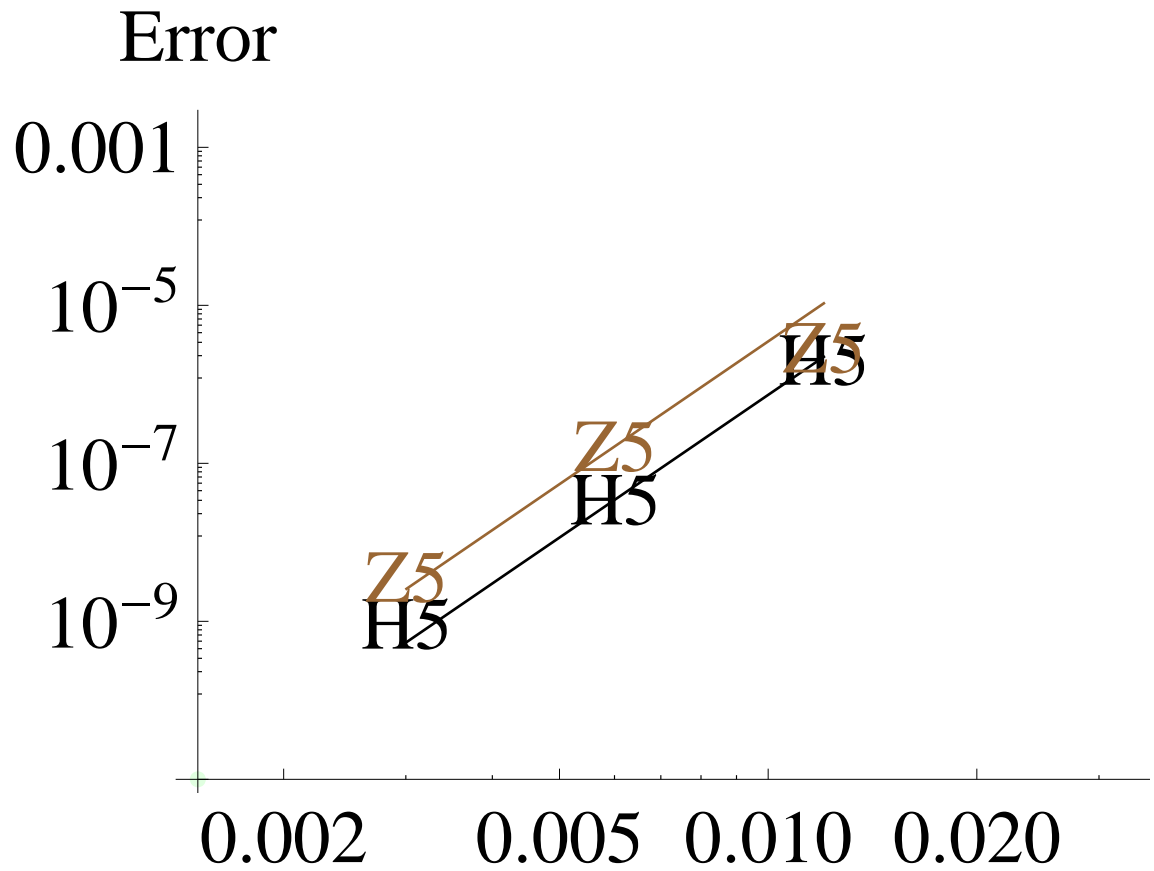


```
Show[pr0, plh4, plz4]
```

Error



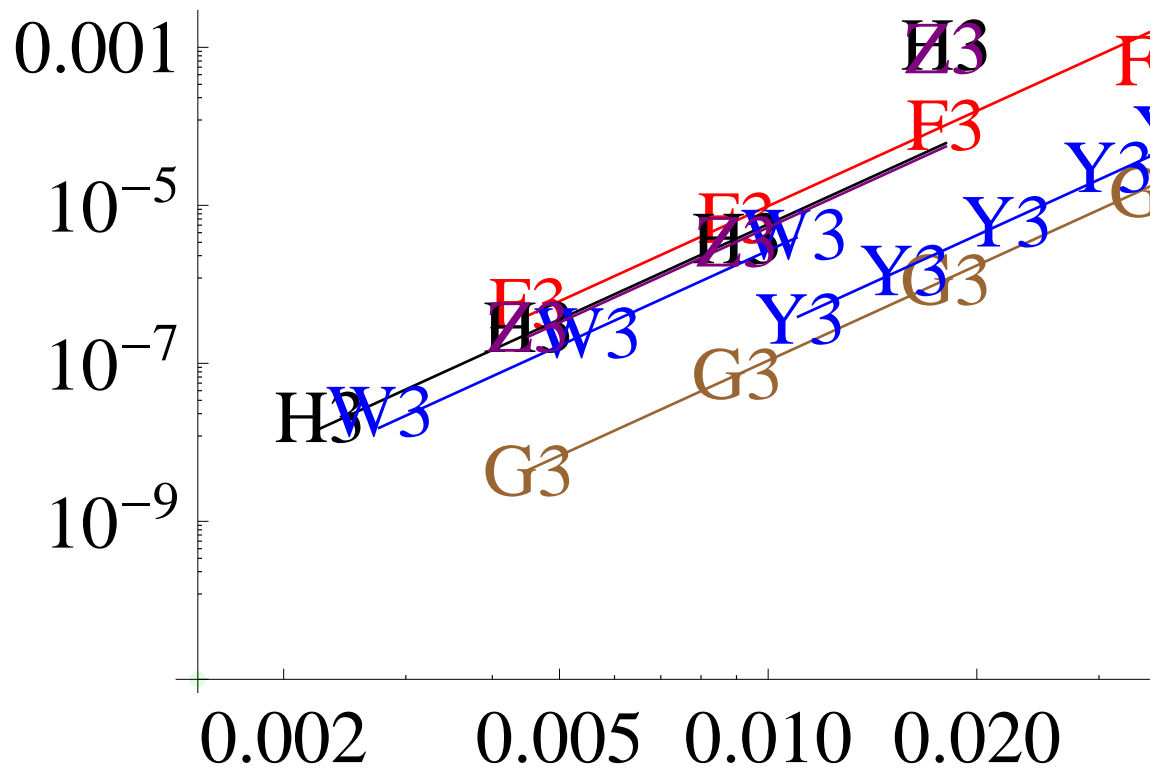
```
Show[pr0, plh5, plz5]
```



The case  $p = 3$

```
Show[pr0, plf3, plg3,
      plh3, plw3, ply3, plz3]
```

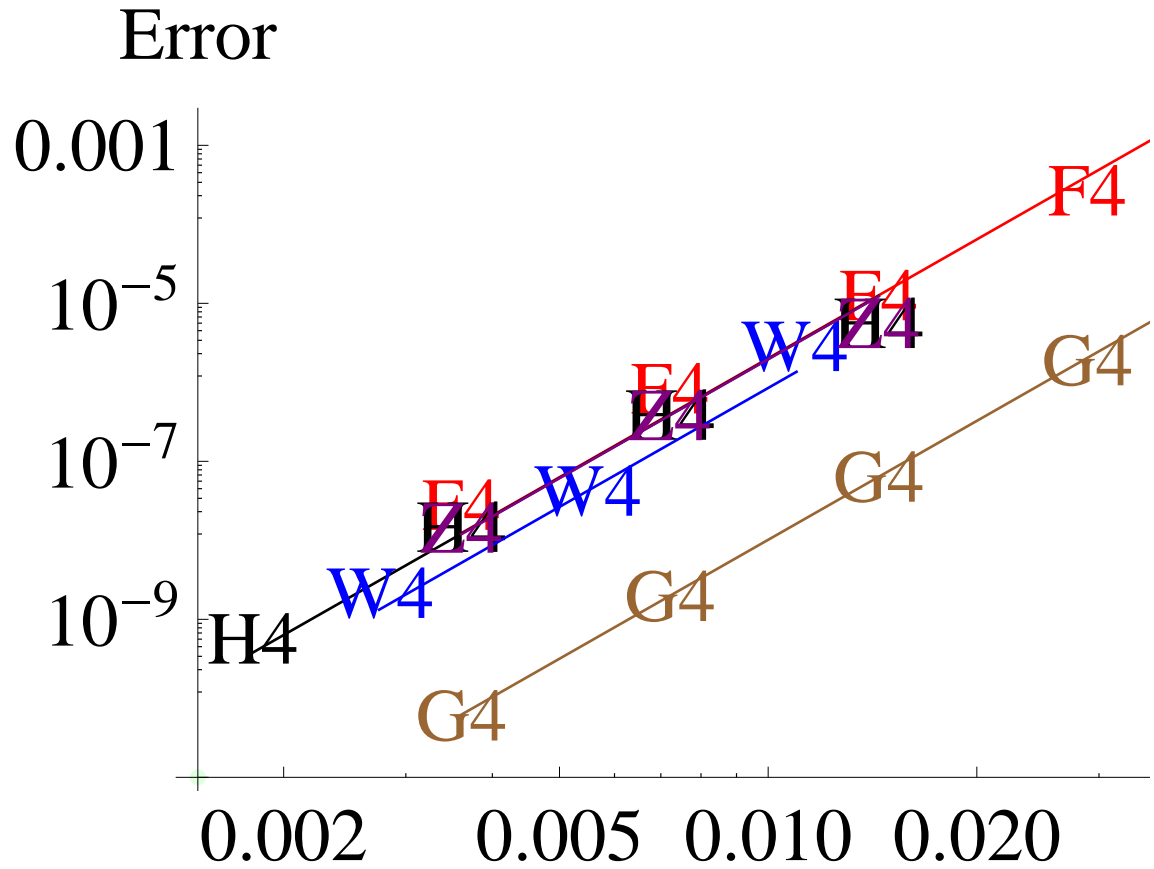
Error



The case  $p = 4$

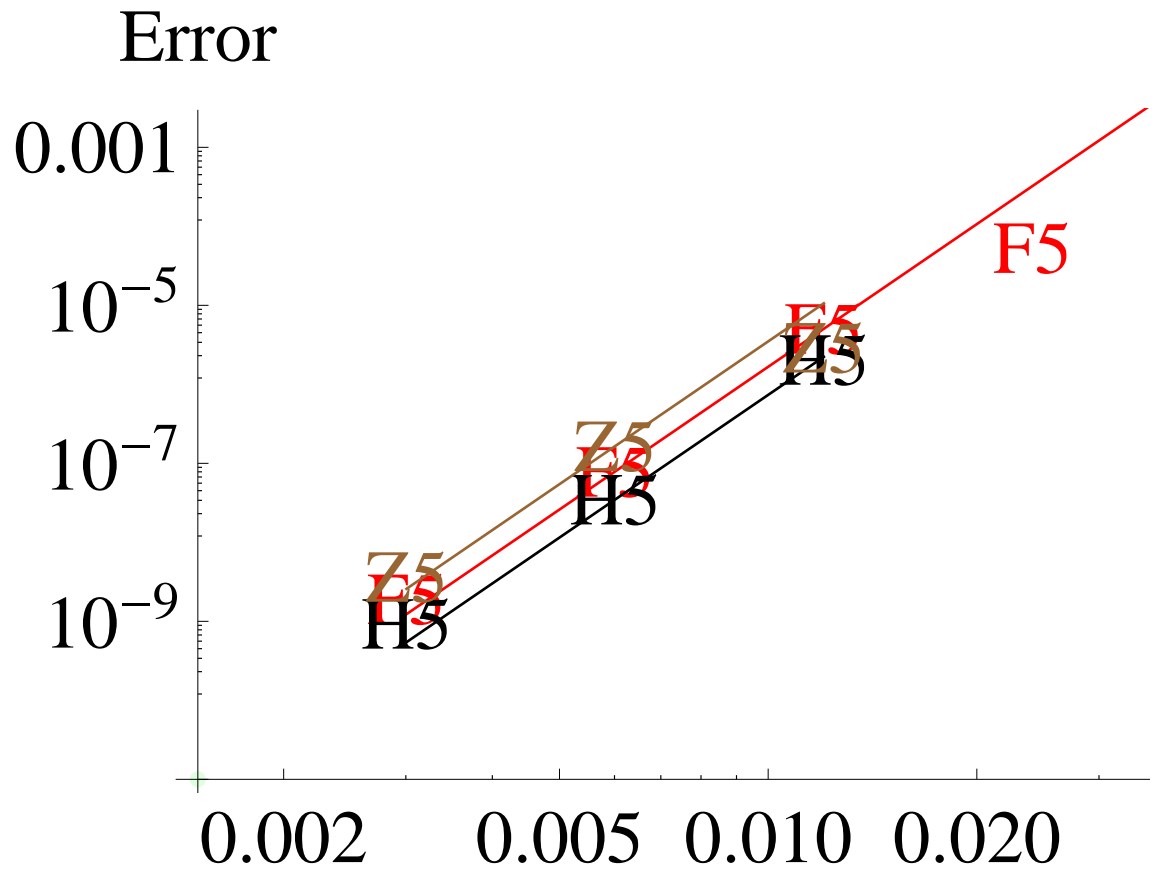


```
Show[pr0, plf4,
      plg4, plh4, plw4, plz4]
```

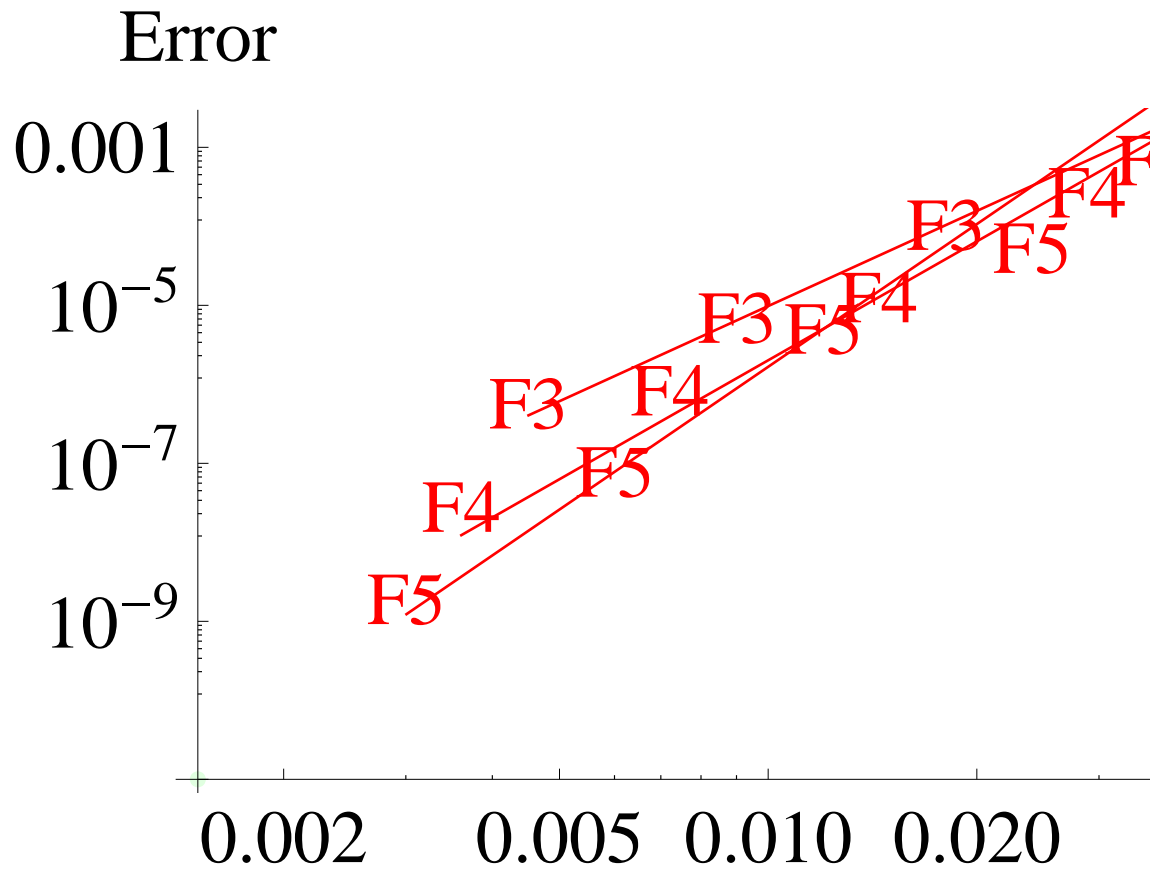


The case  $p = 5$

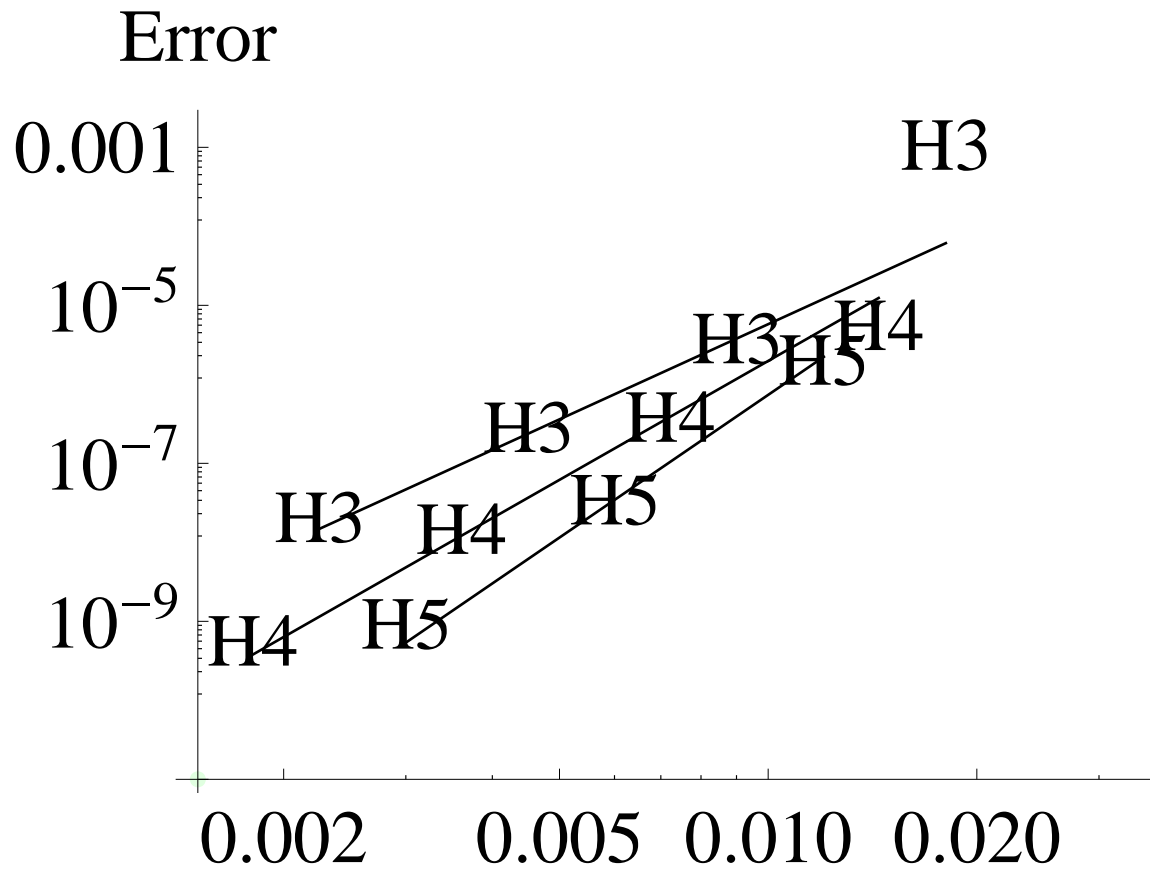
```
Show[pr0, plf5, plh5, plz5]
```



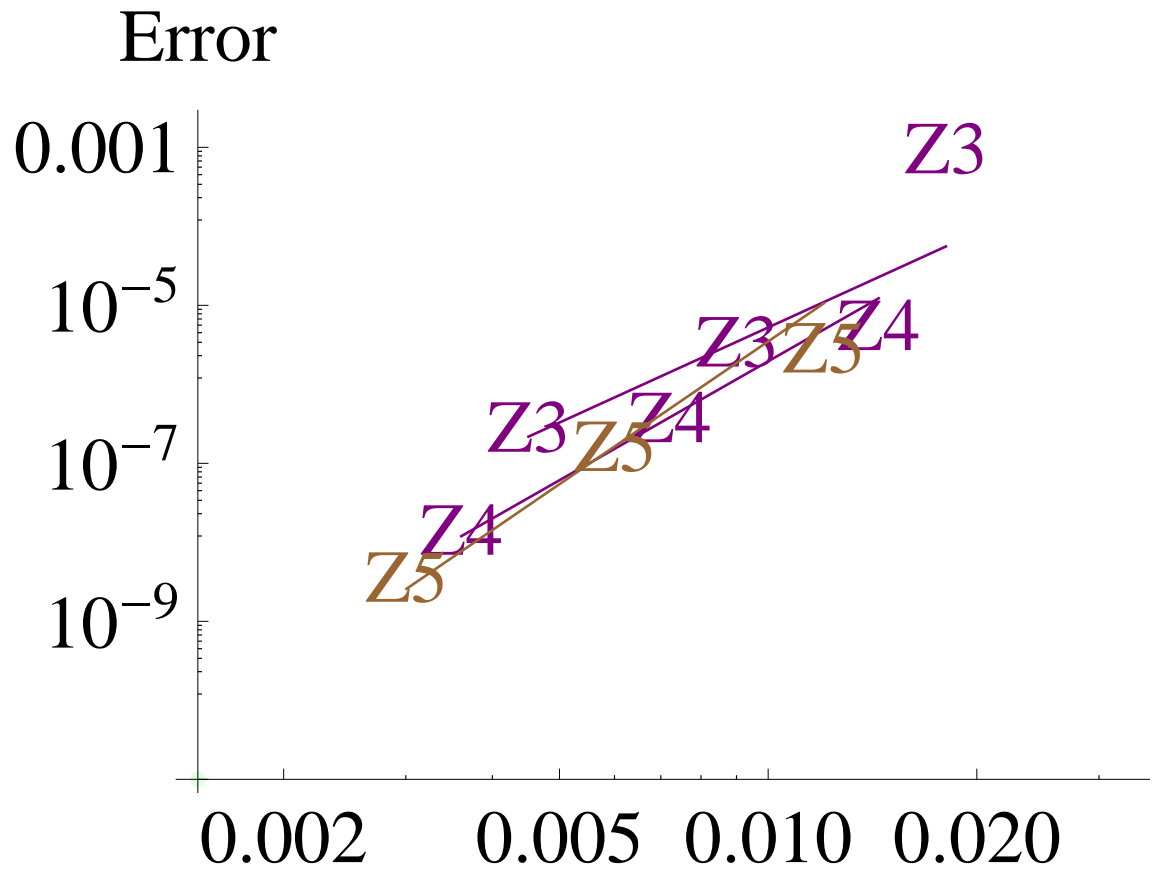
```
af = Show[pr0, plf3, plf4, plf5]
```



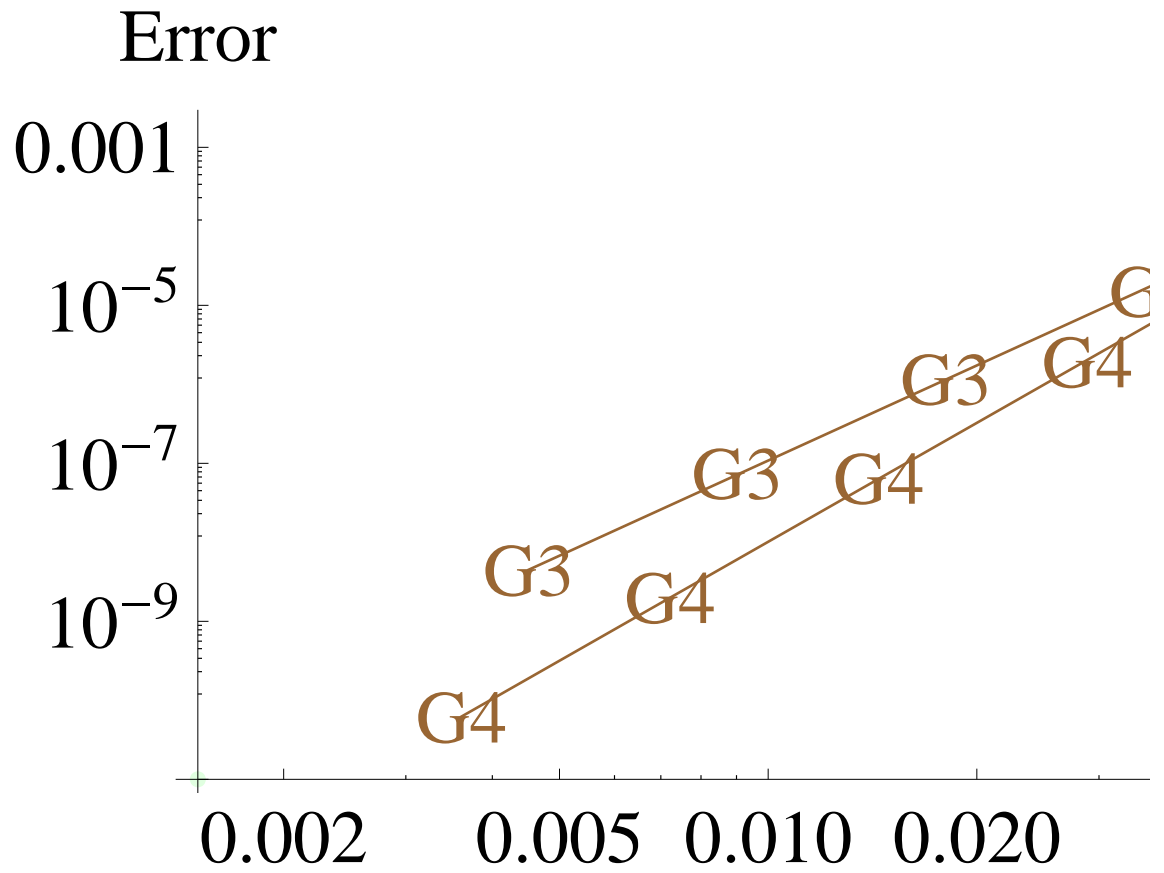
```
ah = Show[pr0, plh3, plh4, plh5]
```



```
az = Show[pr0, plz3, plz4, plz5]
```



```
Show[pr0, plg3, plg4]
```



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# Computing time

Case  $p = 3$ , #cells  $96 \times 32 = 3072$ , #DOF = 49152

Workunits Author

14.0	Fidkowski
20.2	Galbraith, Orkwis and Bennek
?	van der Weide and Svard
5.2	Yano and Darmofal (#DOF = 8105)
3.4	Zhou and Wang