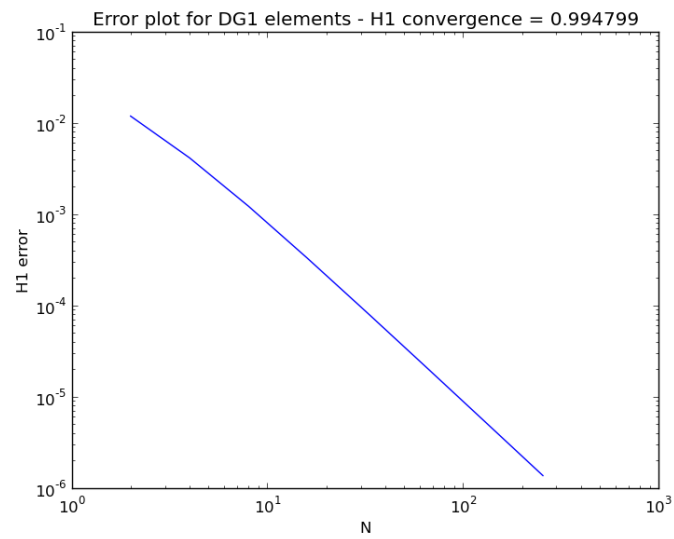
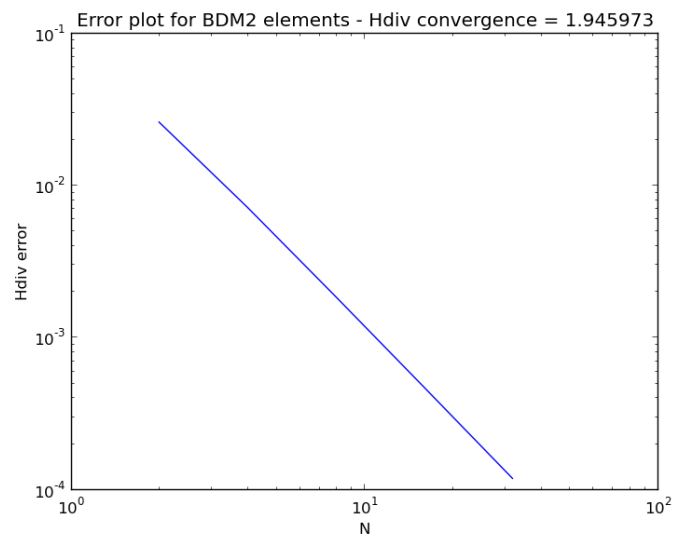
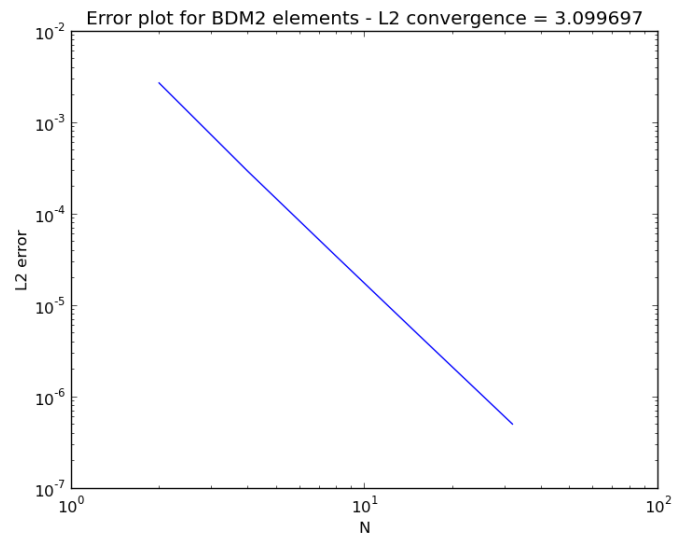

DG scalar Laplacian



[top](#)

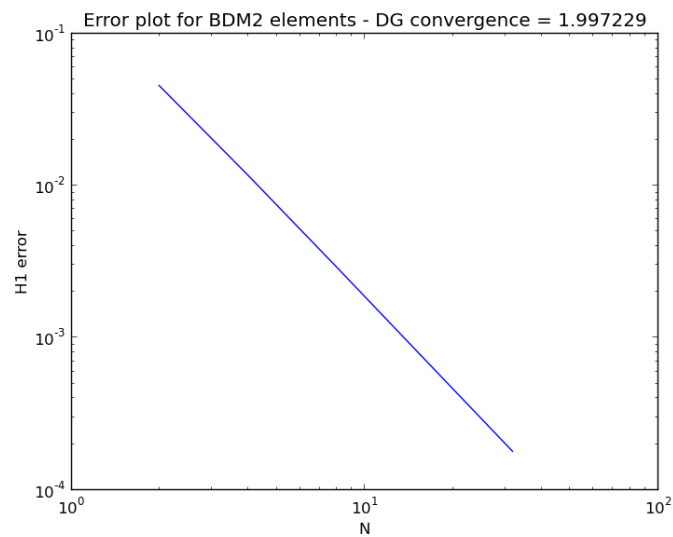
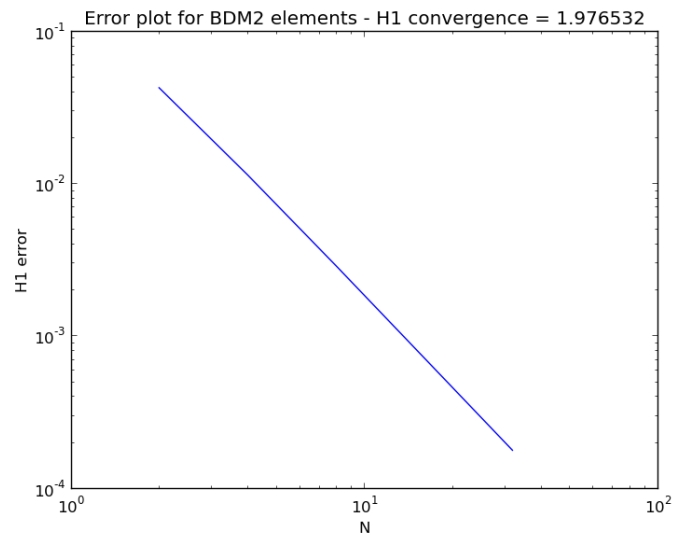
BDM vector Laplacian



CG vector Laplacian

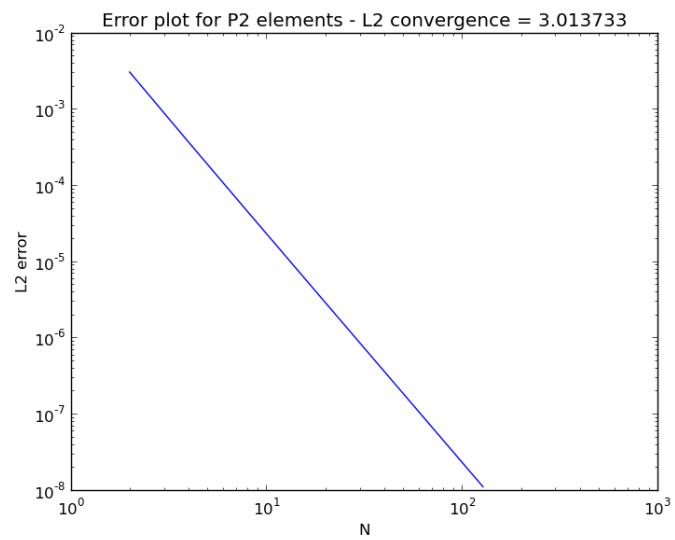
Bilinear form

Here is the new bilinear form for the Laplacian. We took care of the jump conditions on the between the triangles on the interior of the mesh but did not enforce anything



on the boundaries. This is just for the DG scalar Laplacian but I was simple to extend this to the vector Laplacian.

```
a = dot(grad(v), grad(u))*dx \
    - dot(avg(grad(v)), jump(u, n))*dS \
    - dot(jump(v, n), avg(grad(u)))*dS \
    + alpha/h_avg*dot(jump(v, n), jump(u, n))*dS \
```



$$\begin{aligned} & - \text{dot}(v*n, \text{grad}(u))*ds \quad \backslash \\ & - \text{dot}(\text{grad}(v), u*n)*ds \quad \backslash \\ & + \text{gamma}/h*v*u*ds \end{aligned}$$
