Initial Results of Error-Based Mesh Adaptation in M3D-C1

Usman Riaz, Seegyoung Seol, Mark Shephard

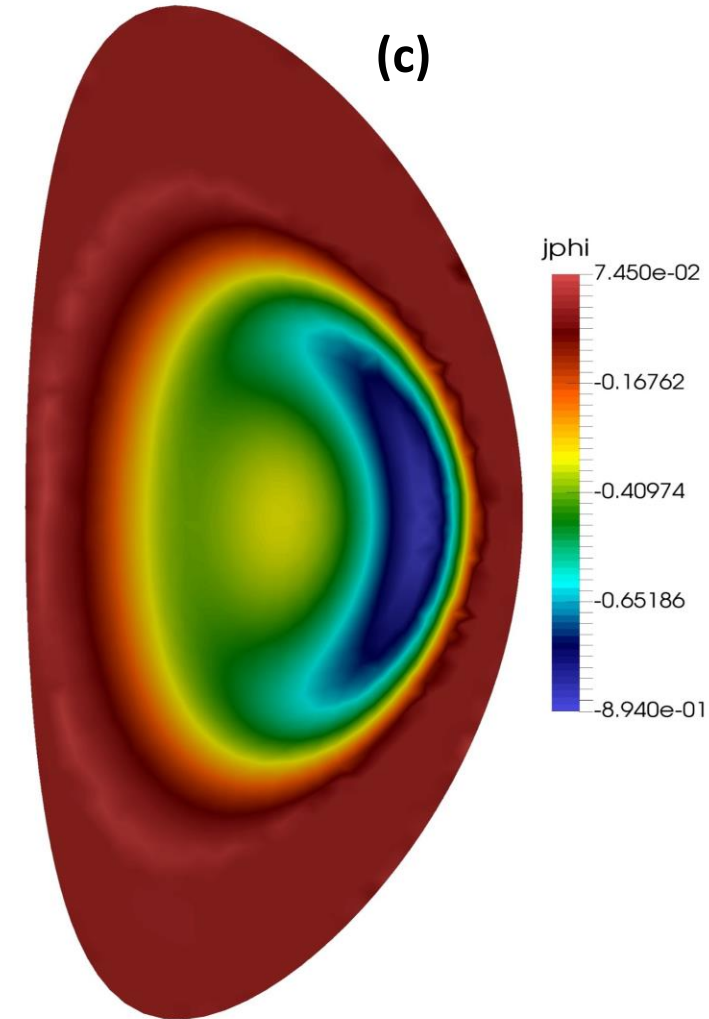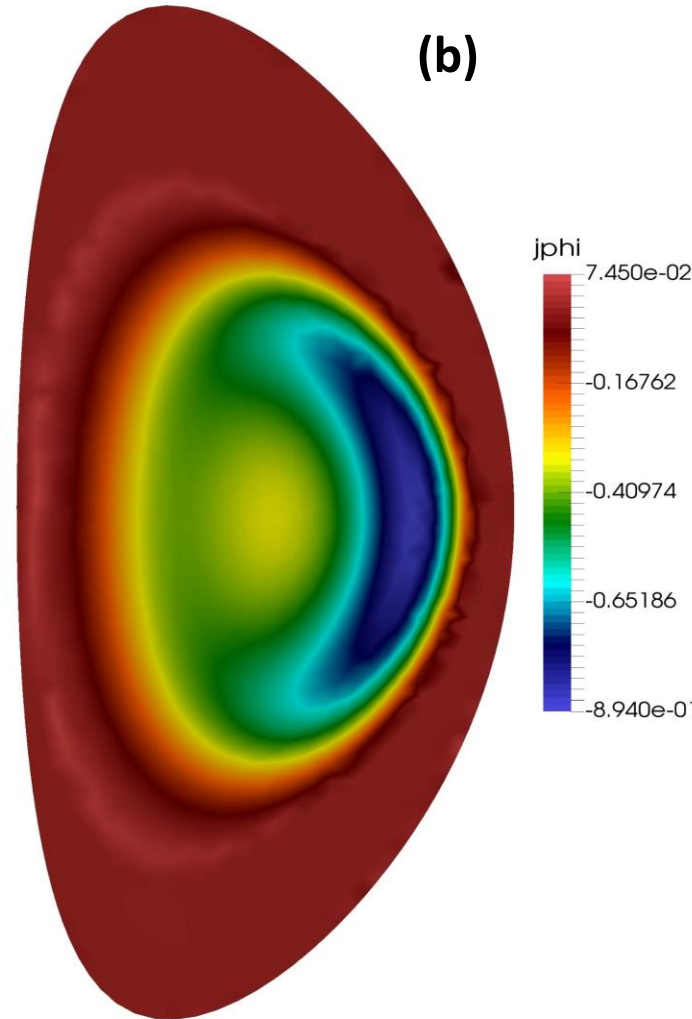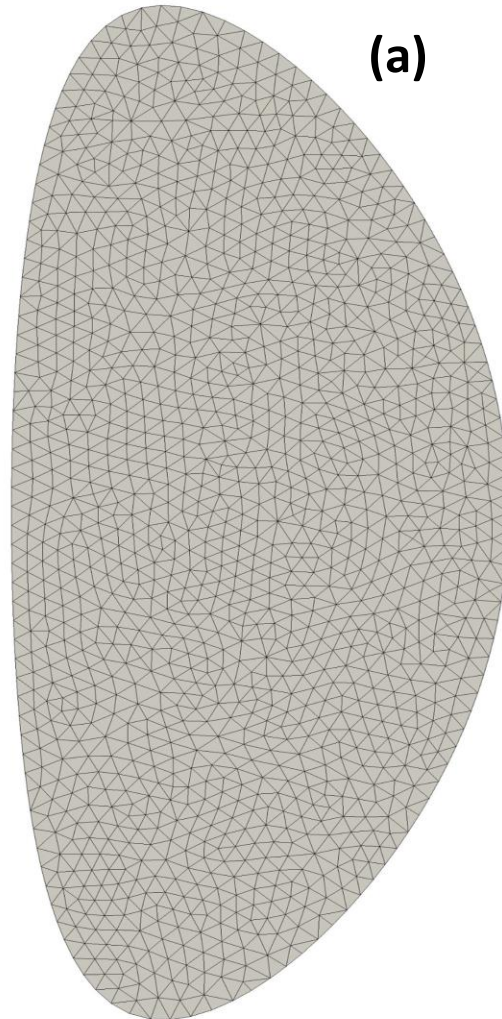**Scientific Computation Research Center**
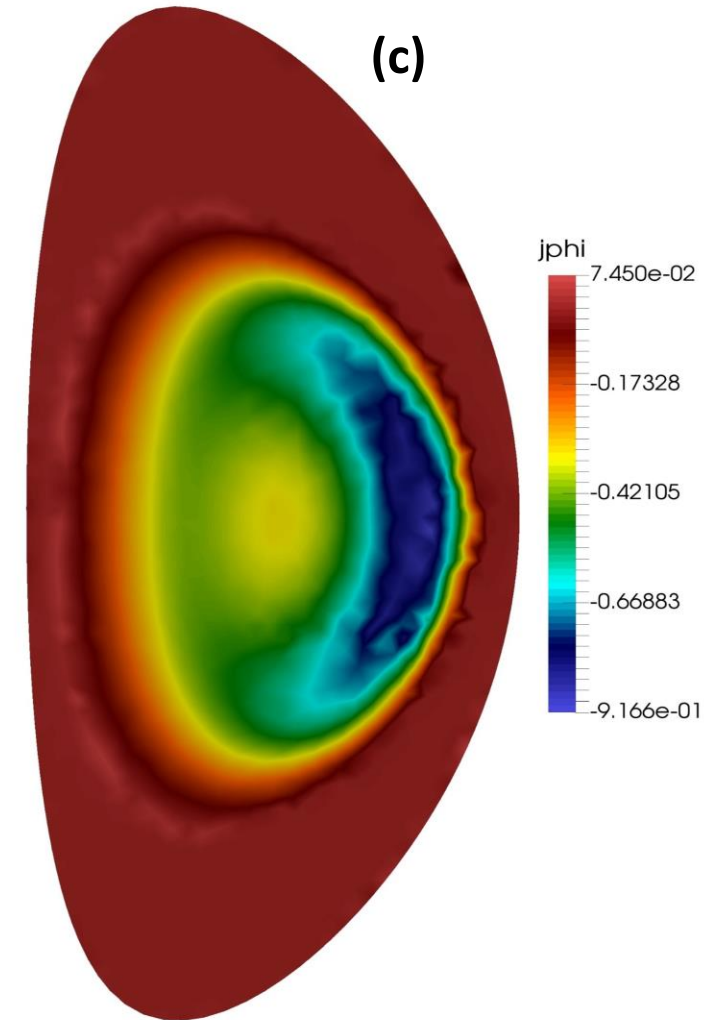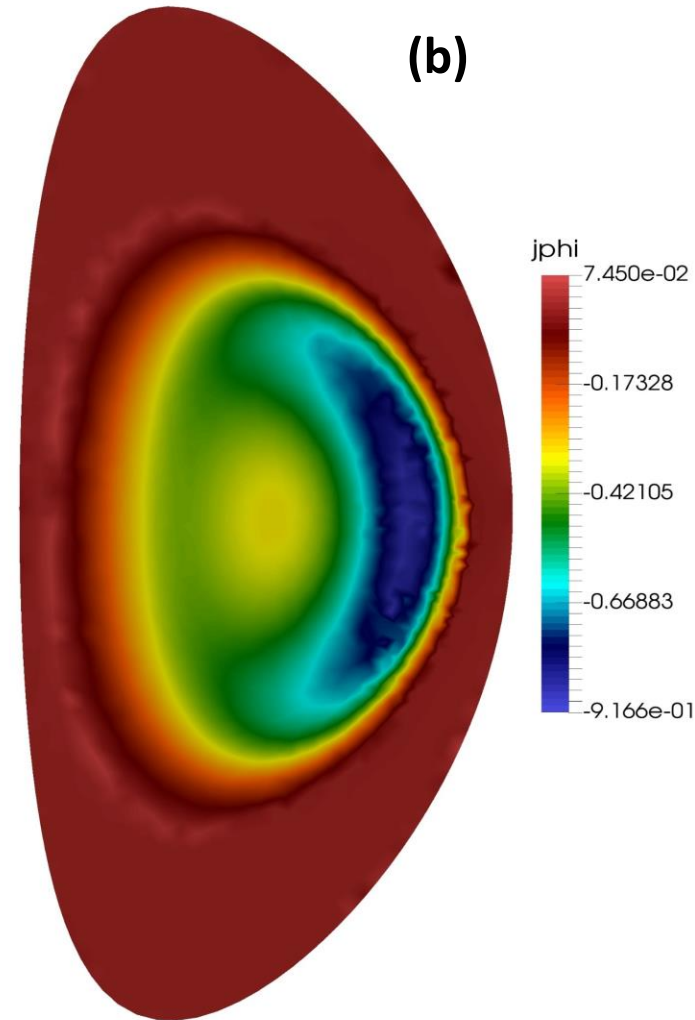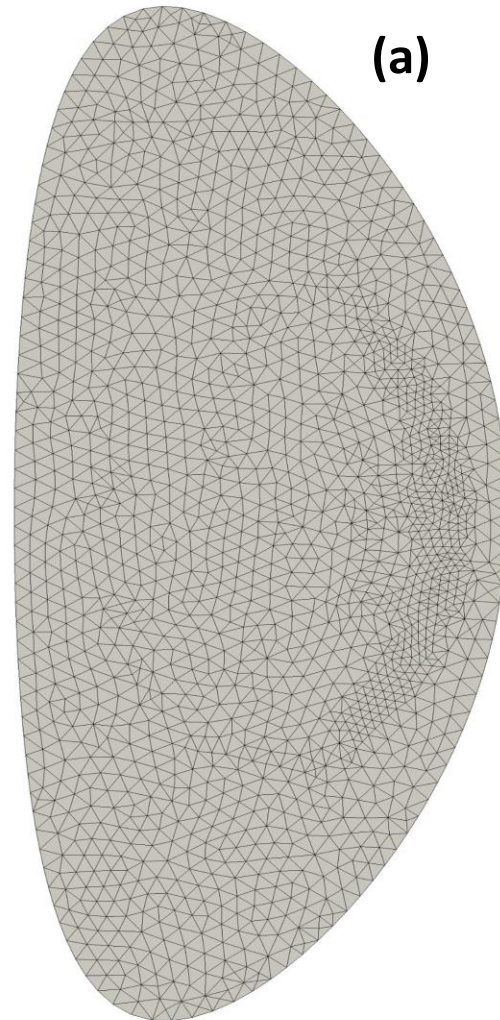**Rensselaer Polytechnic Institute**

SCOREC

Timestep = 10

	adapted mesh	Initial mesh
mesh vertices	n/a	1323
mesh edges	n/a	3841
mesh faces	n/a	2519

- Mesh Parts: 4
- Time steps per adapt: 10
- $\nabla(\psi_{,R})$
- (a): adapted mesh
- (b): solution on adapted mesh
- (c): solution on initial mesh

(a)

(b)

(c)

jphi
7.450e-02
-0.16762
-0.40974
-0.65186
-8.940e-01

Timestep = 100

	adapted mesh	Initial mesh
mesh vertices	1718	1323
mesh edges	5026	3841
mesh faces	3309	2519

(a)

(b)

(c)

jphi
7.450e-02
-0.17328
-0.42105
-0.66883
-9.166e-01

jphi
7.450e-02
-0.17328
-0.42105
-0.66883
-9.166e-01

Timestep = 200

	adapted mesh	Initial mesh
mesh vertices	2172	1323
mesh edges	6388	3841
mesh faces	4217	2519

(a)

(b)

(c)
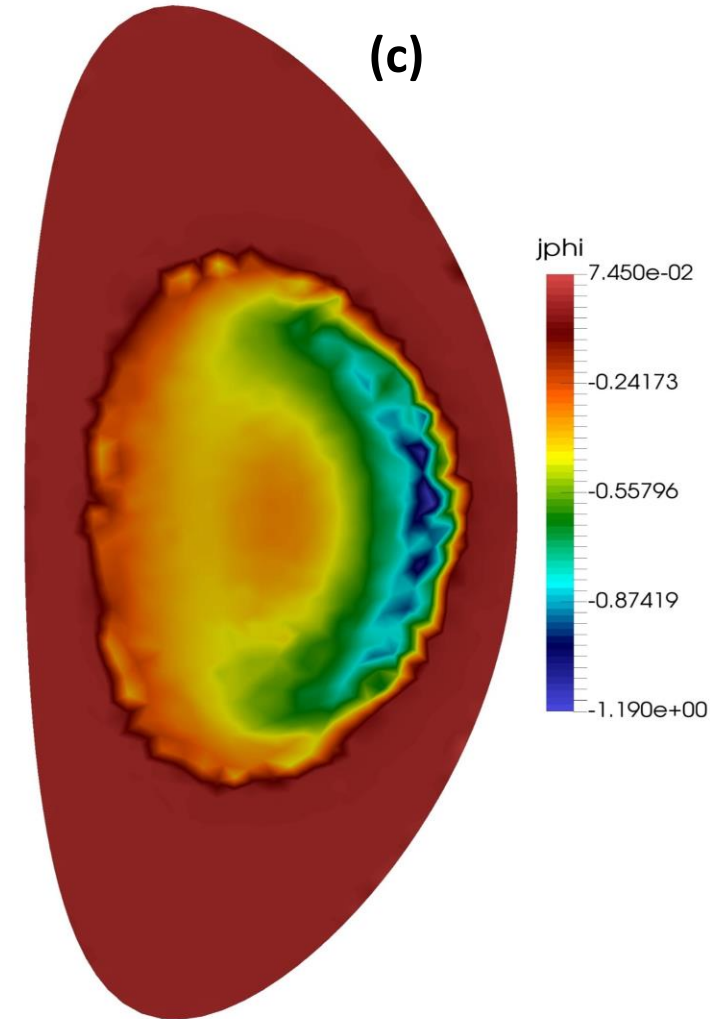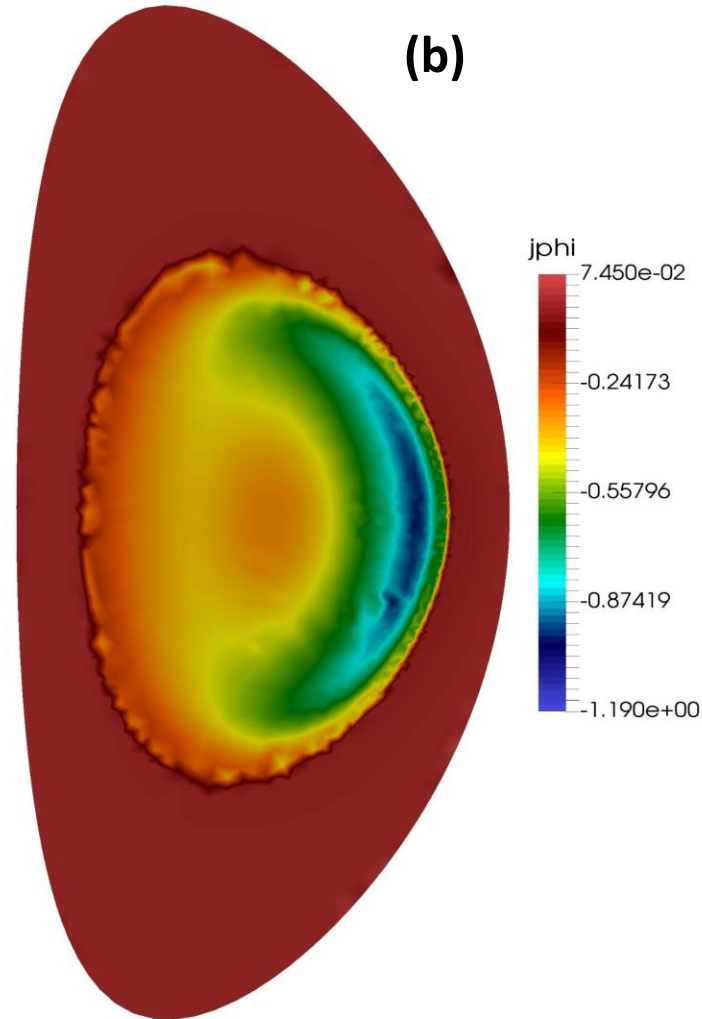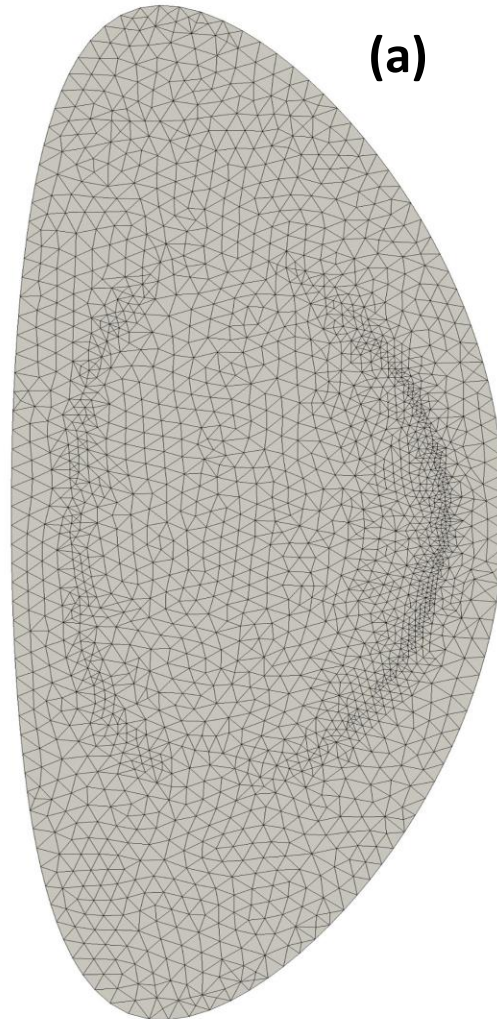
Timestep = 300

	adapted mesh	Initial mesh
mesh vertices	3976	1323
mesh edges	11800	3841
mesh faces	7825	2519
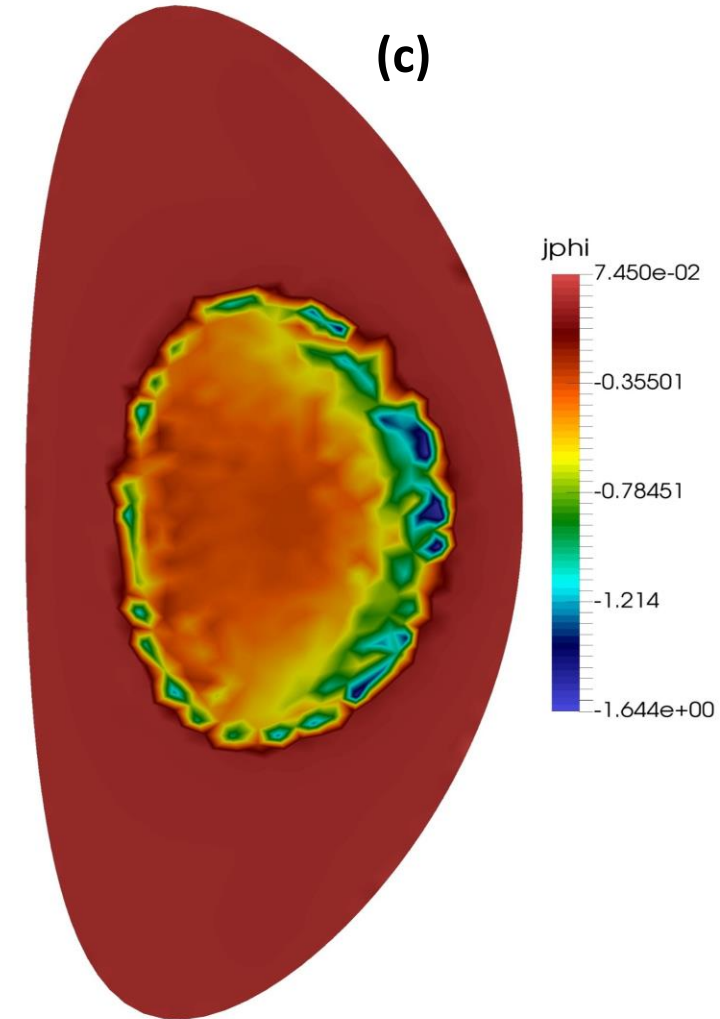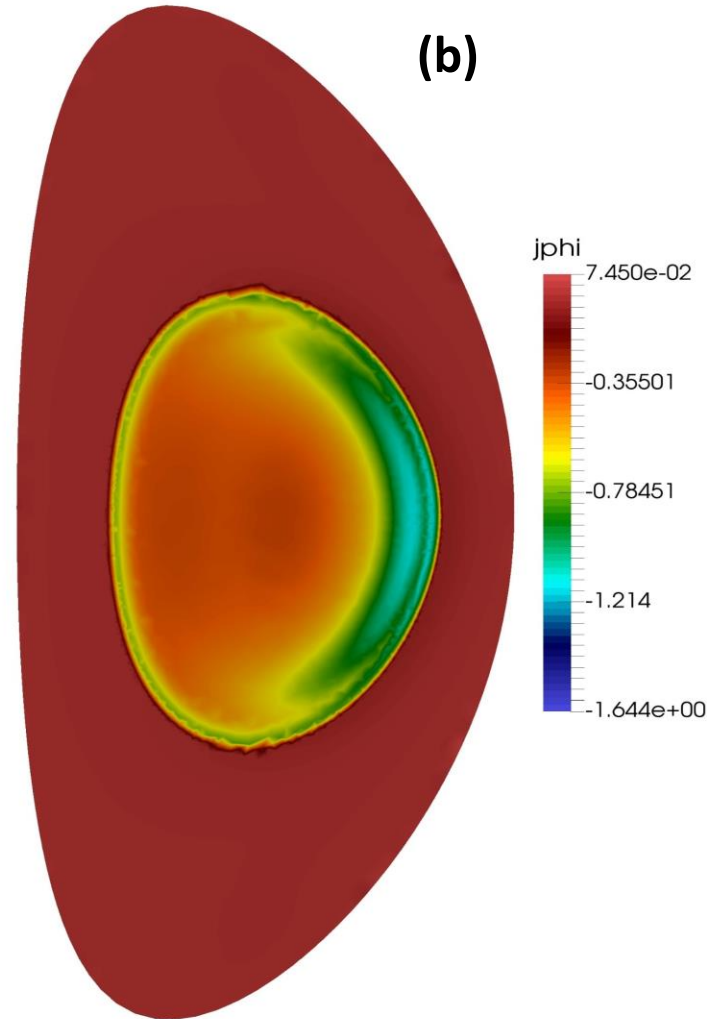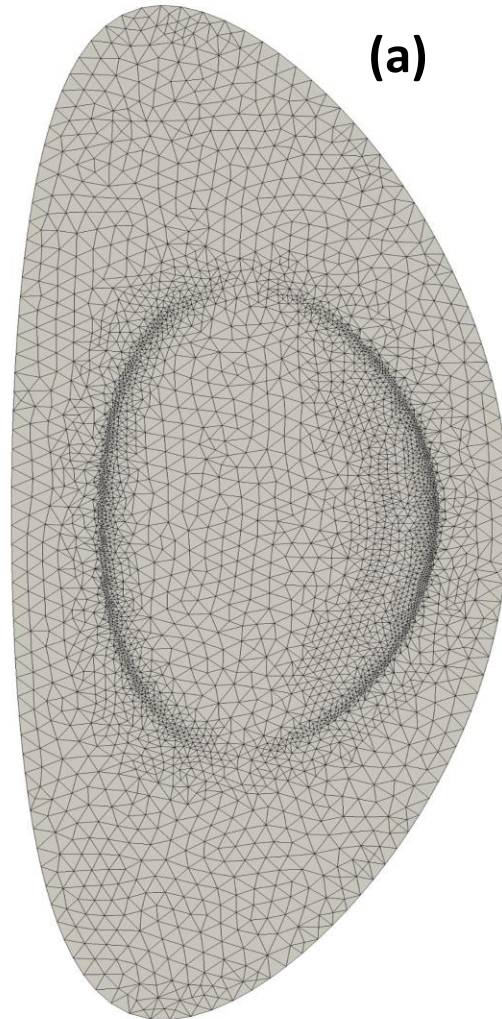
Timestep = 400

	adapted mesh	Initial mesh
mesh vertices	5629	1323
mesh edges	16759	3841
mesh faces	11131	2519

(a)

(b)

jphi

7.450e-02

-0.4685

-1.0115

-1.5545

-2.098e+00

(c)

jphi

7.450e-02

-0.4685

-1.0115

-1.5545

-2.098e+00
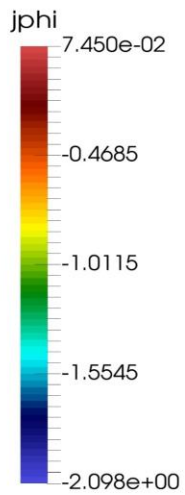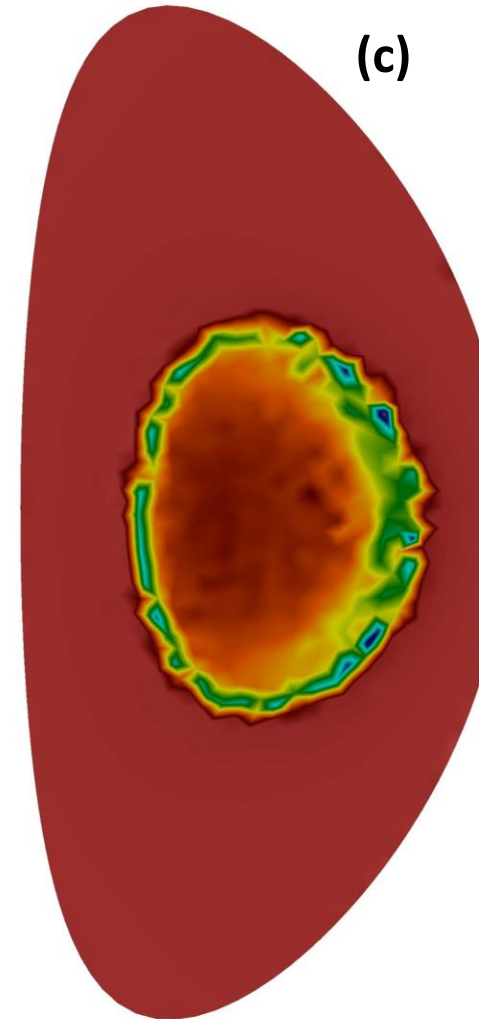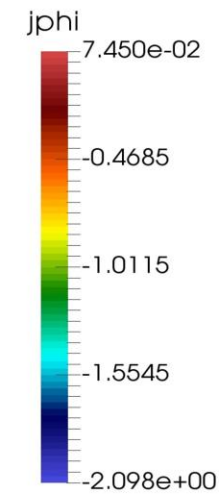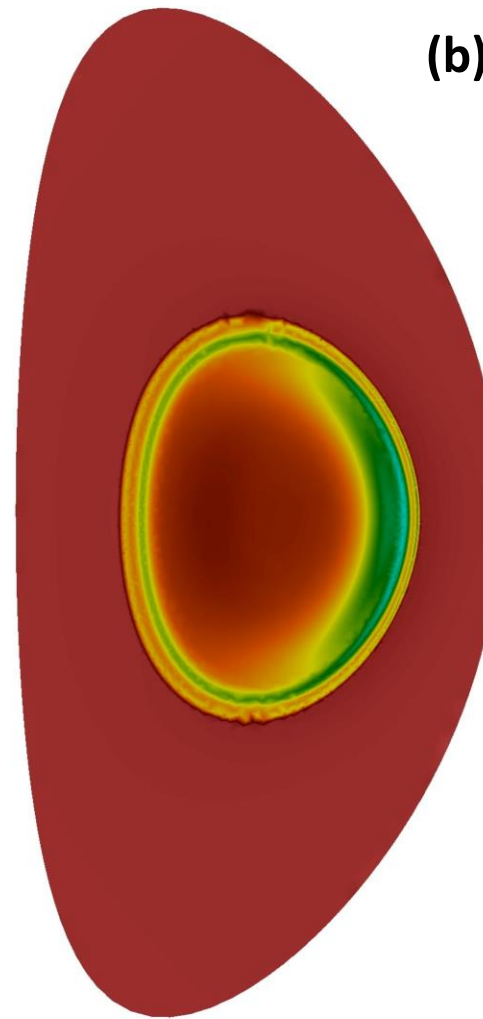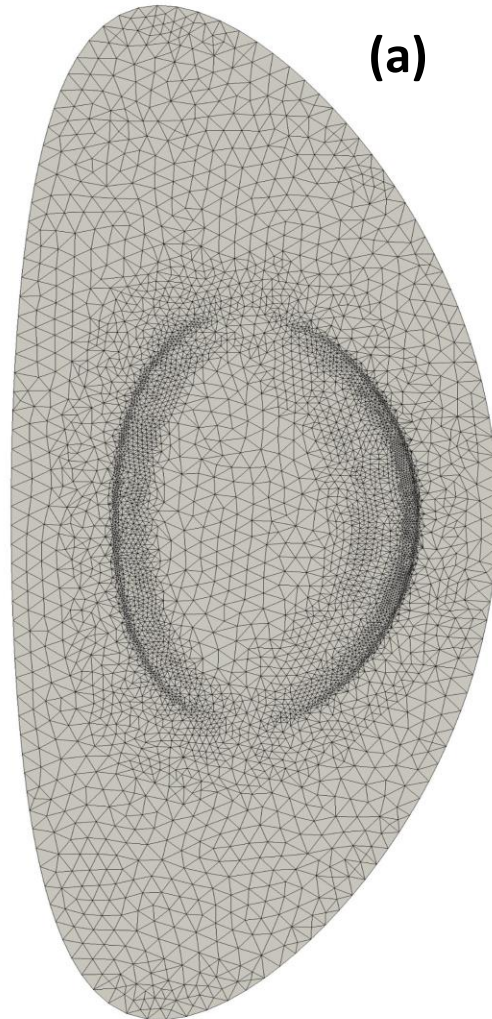
Timestep = 500

	adapted mesh	Initial mesh
mesh vertices	6713	1323
mesh edges	20011	3841
mesh faces	13299	2519
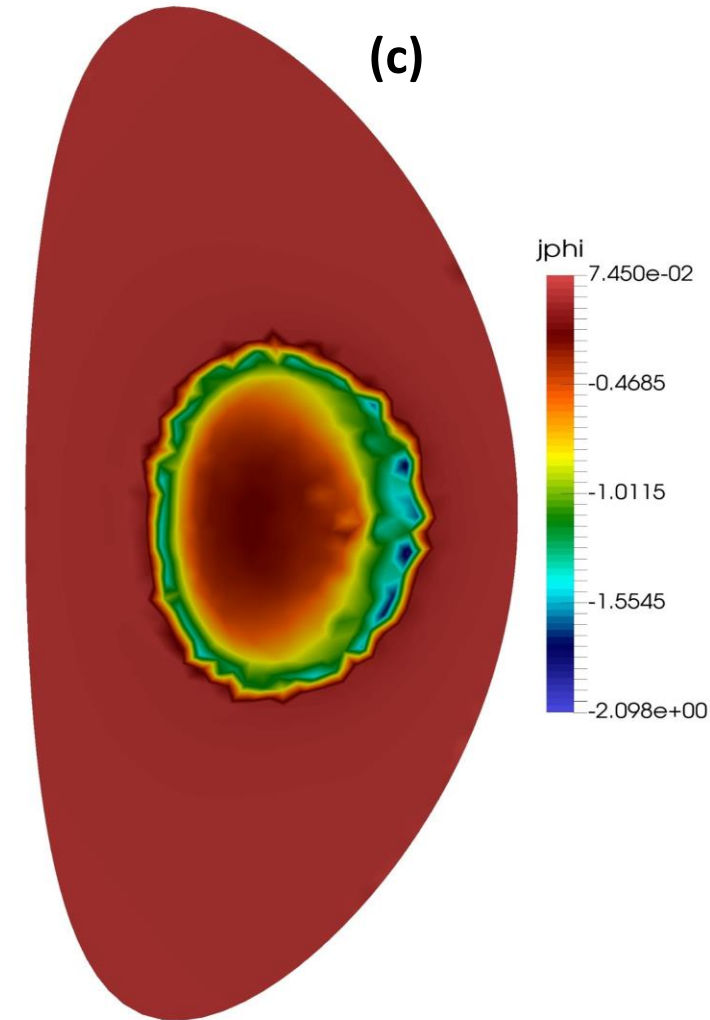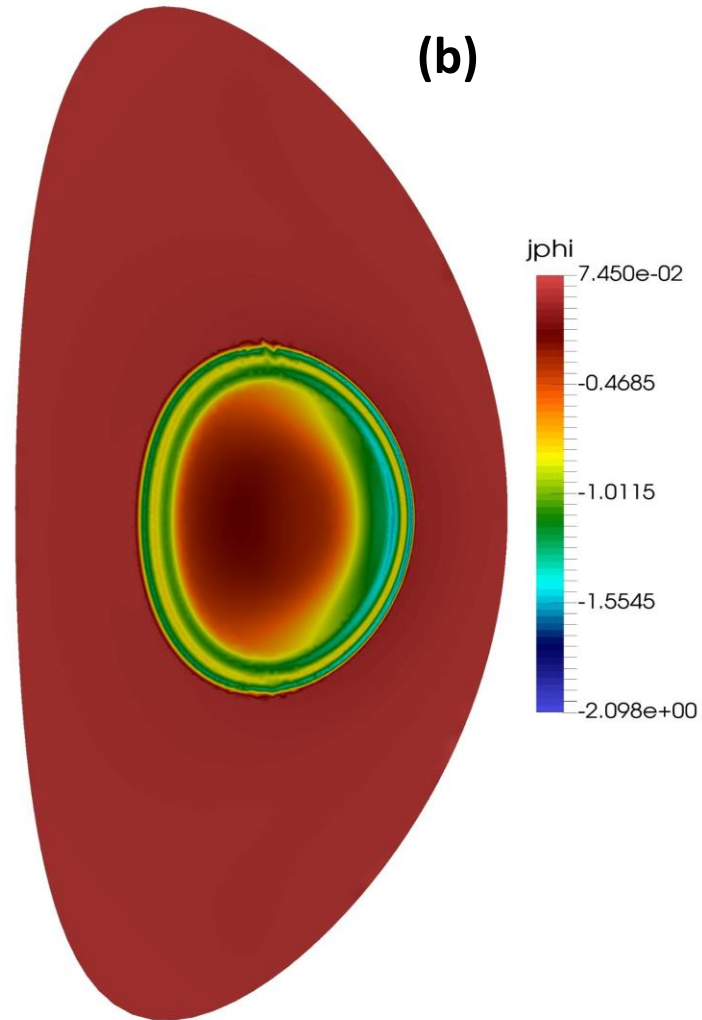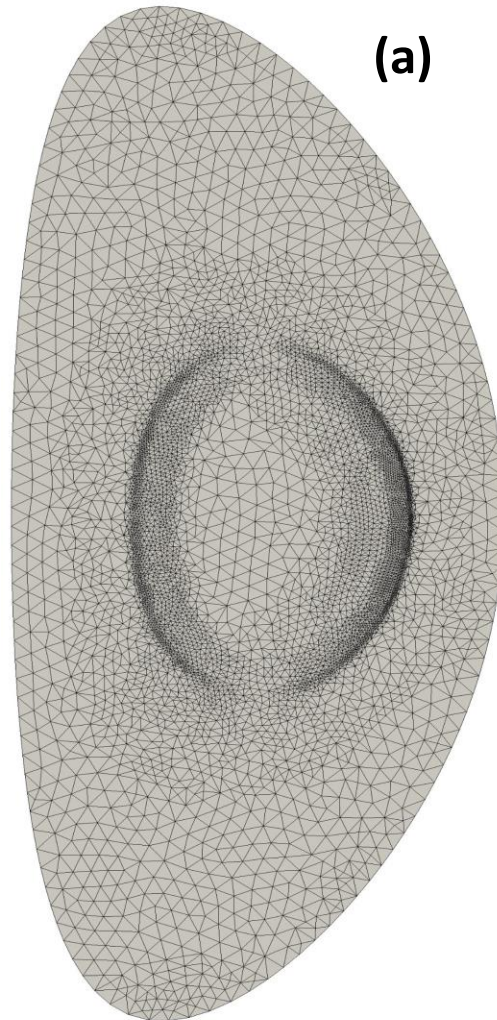
Timestep = 600

	adapted mesh	Initial mesh
mesh vertices	28053	1323
mesh edges	84031	3841
mesh faces	55979	2519