

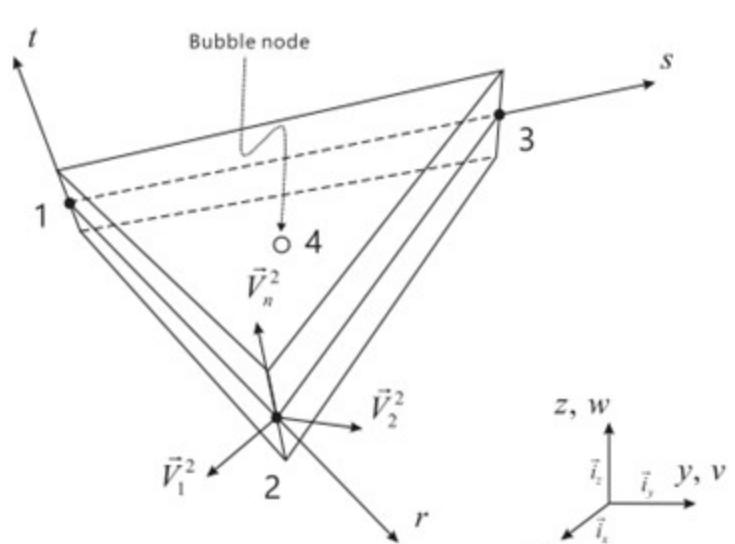
Finite Element Method


 CMSS Computational Mechanics and Structural Systems Lab
 Professor Phill-Seung Lee

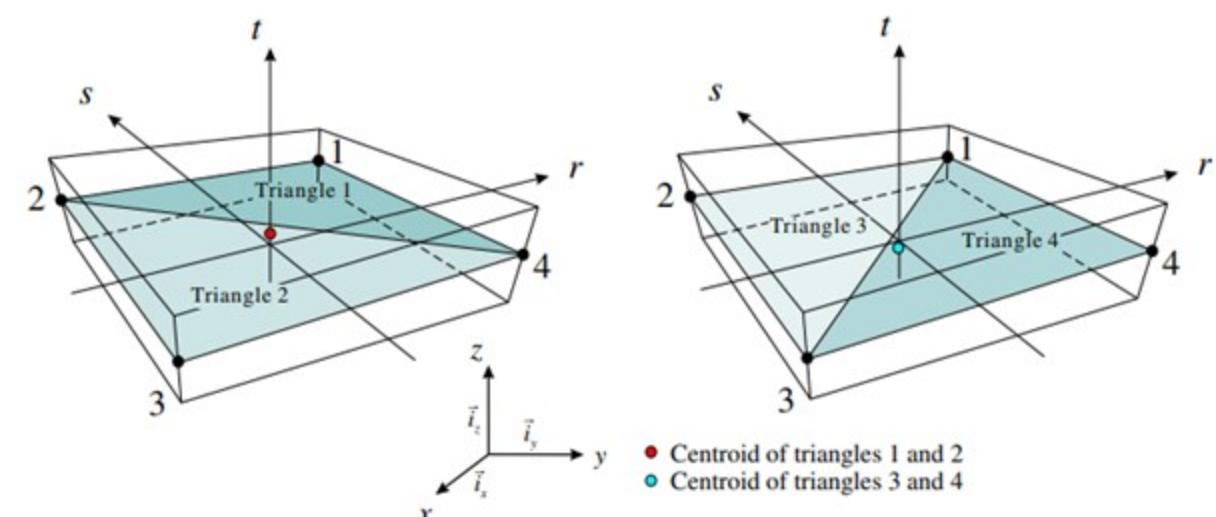
Continuum mechanics based shell elements

MITC3+ shell finite element

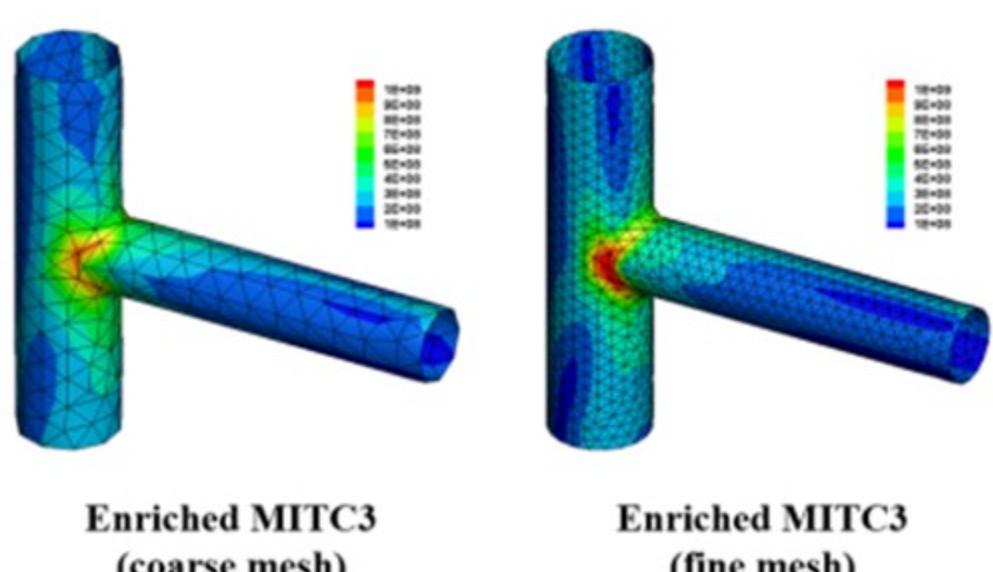
Youngyu Lee (2014)


MITC4+ shell finite element

Yeongbin Ko (2016)

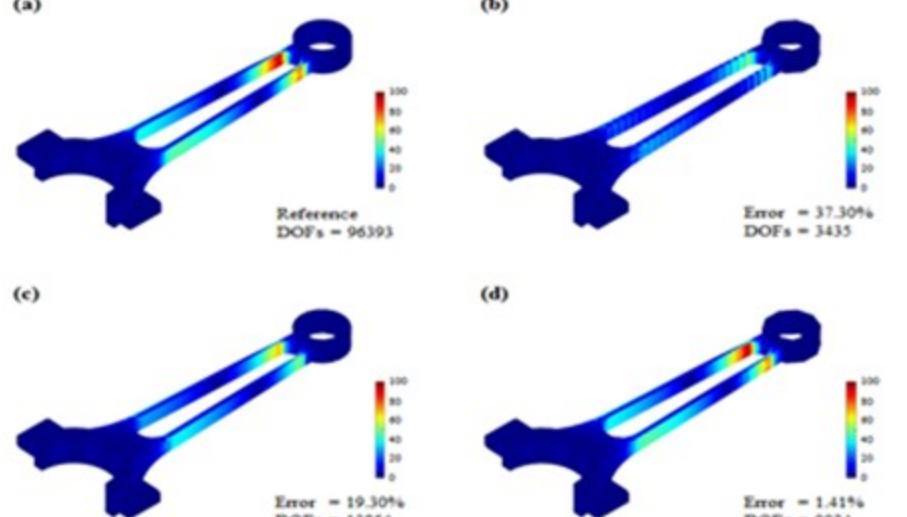


Enriched finite element

Enriched shell finite elements Hyungmin Jun (2015)


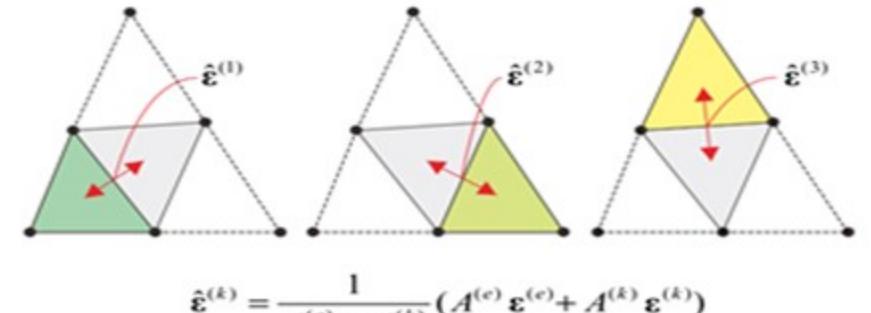
Enriched solid finite elements

San Kim (2019)



Strain-smoothed element method for solid and shell finite elements

Chaemin Lee (2020), Hoontae Jung (2021)



$$\hat{\varepsilon}^{(k)} = \frac{1}{A^{(e)} + A^{(k)}} (A^{(e)} \hat{\varepsilon}^{(e)} + A^{(k)} \hat{\varepsilon}^{(k)})$$

$$\varepsilon^a = \frac{1}{2} (\hat{\varepsilon}^{(1)} + \hat{\varepsilon}^{(3)})$$

$$\varepsilon^b = \frac{1}{2} (\hat{\varepsilon}^{(1)} + \hat{\varepsilon}^{(2)})$$

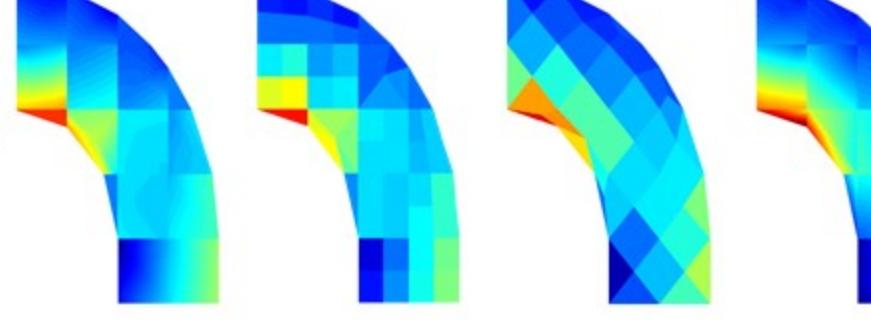
$$\varepsilon^c = \frac{1}{2} (\hat{\varepsilon}^{(2)} + \hat{\varepsilon}^{(3)})$$

$$Wachspress$$

$$CS-FEM$$

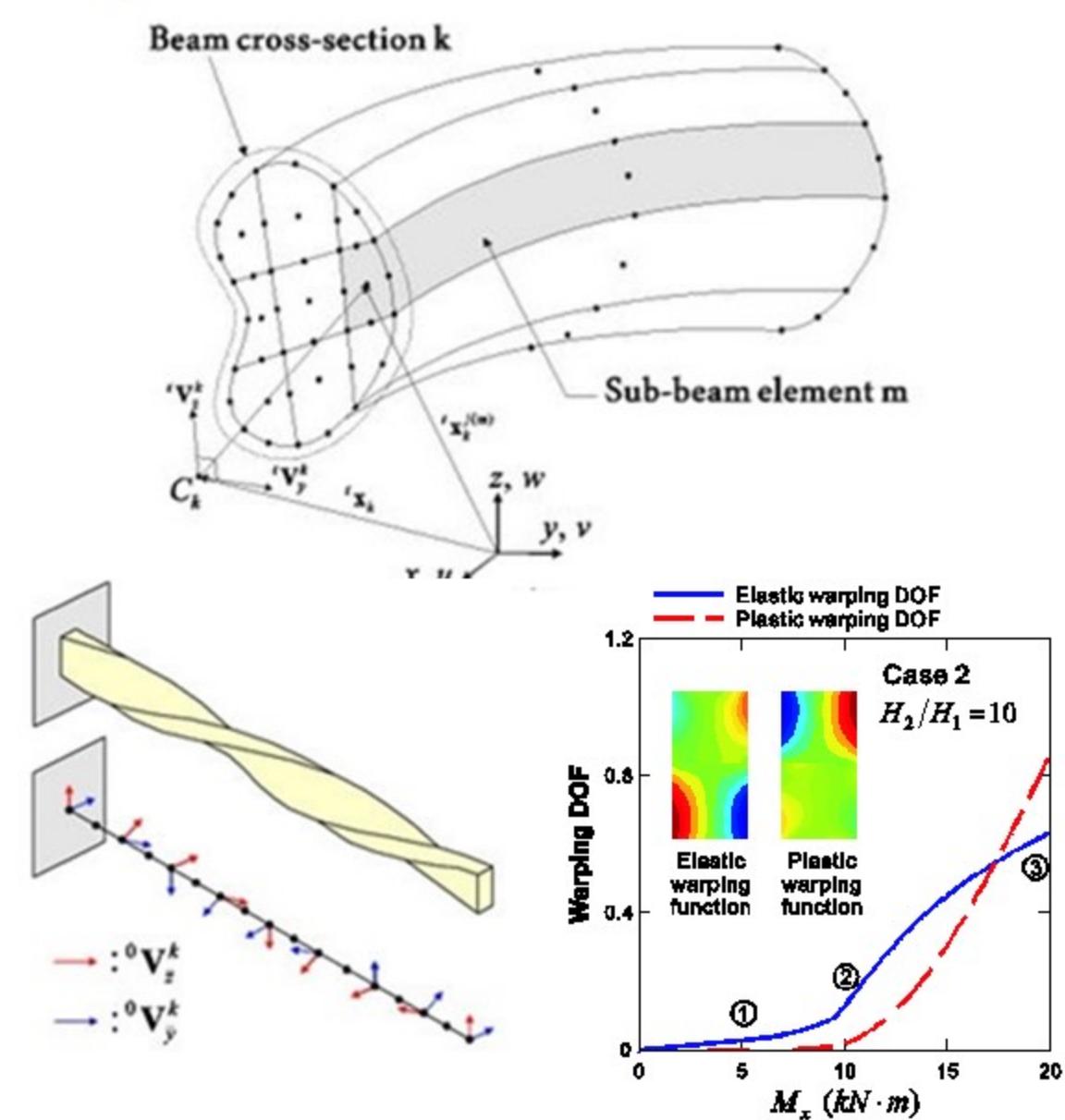
$$ES-FEM$$

$$SSE \text{ (proposed)}$$



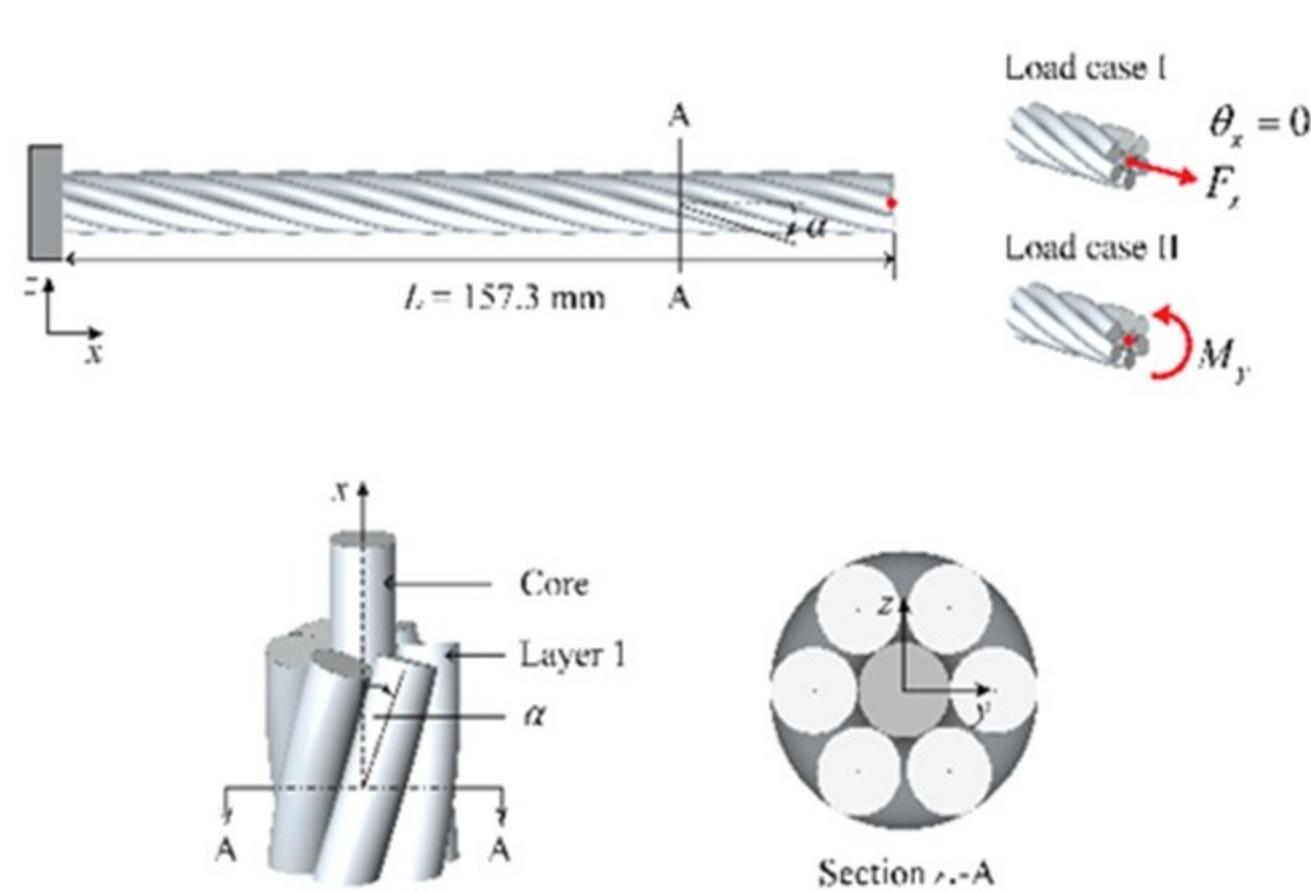
Continuum mechanics based beam elements for linear and nonlinear analysis

Kyungho Yoon (2015)



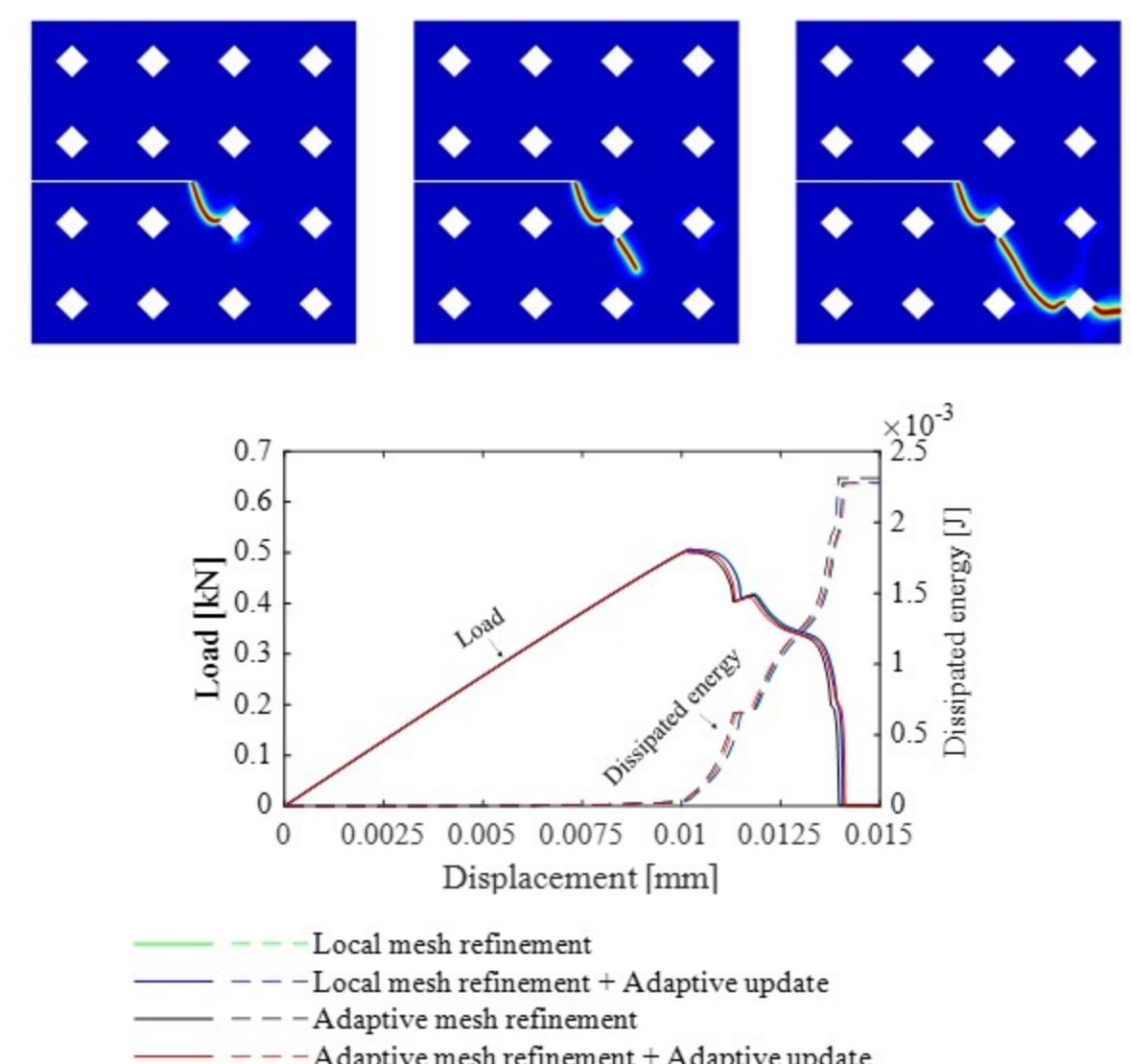
Continuum mechanics based beam elements for linear and nonlinear analyses of multi-layered composite beams and helically stranded cables

Hyo-Jin Kim (2020)



Improving the computational efficiency of the phase field model

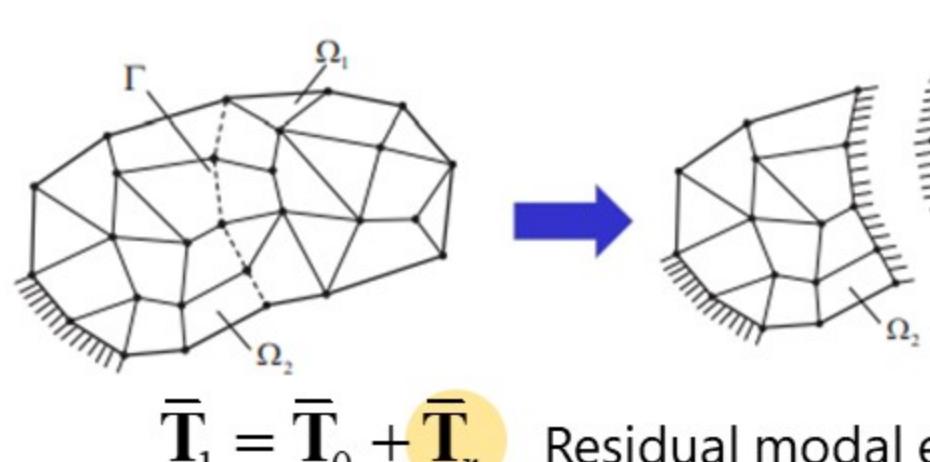
Gihwan Kim (2021)



Model reduction methods

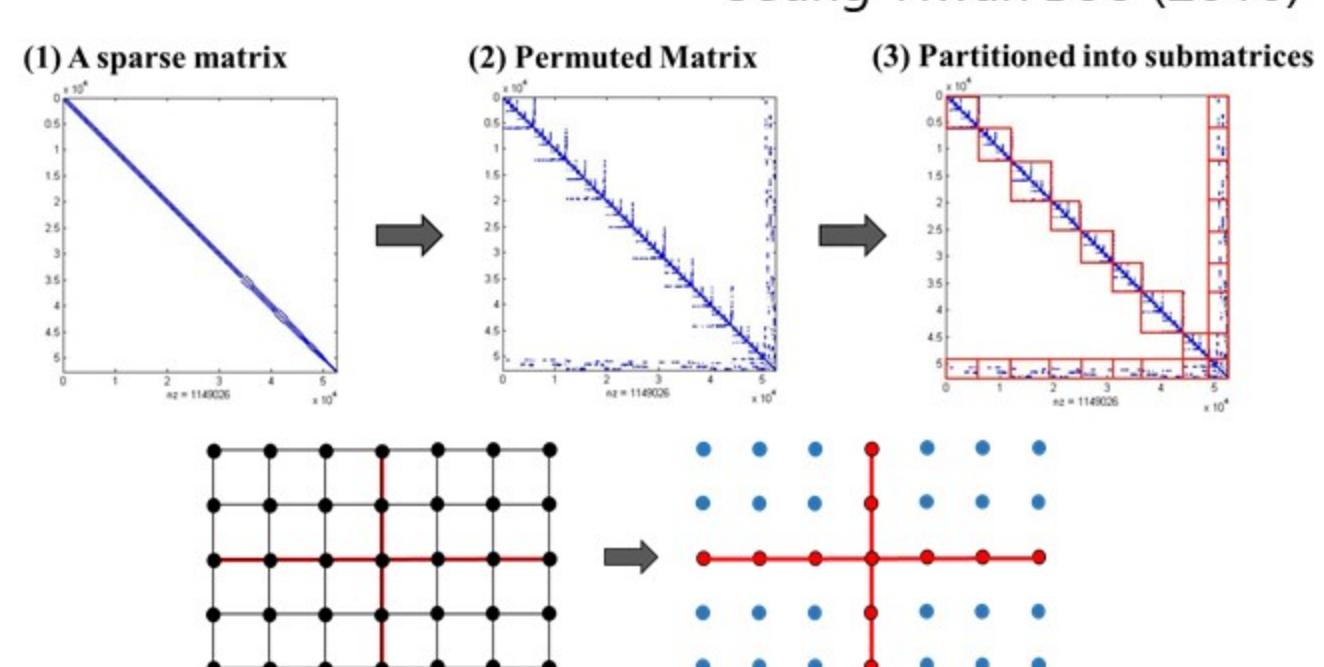
Enhanced Craig-Bampton method

Jin-Gyun Kim (2014)



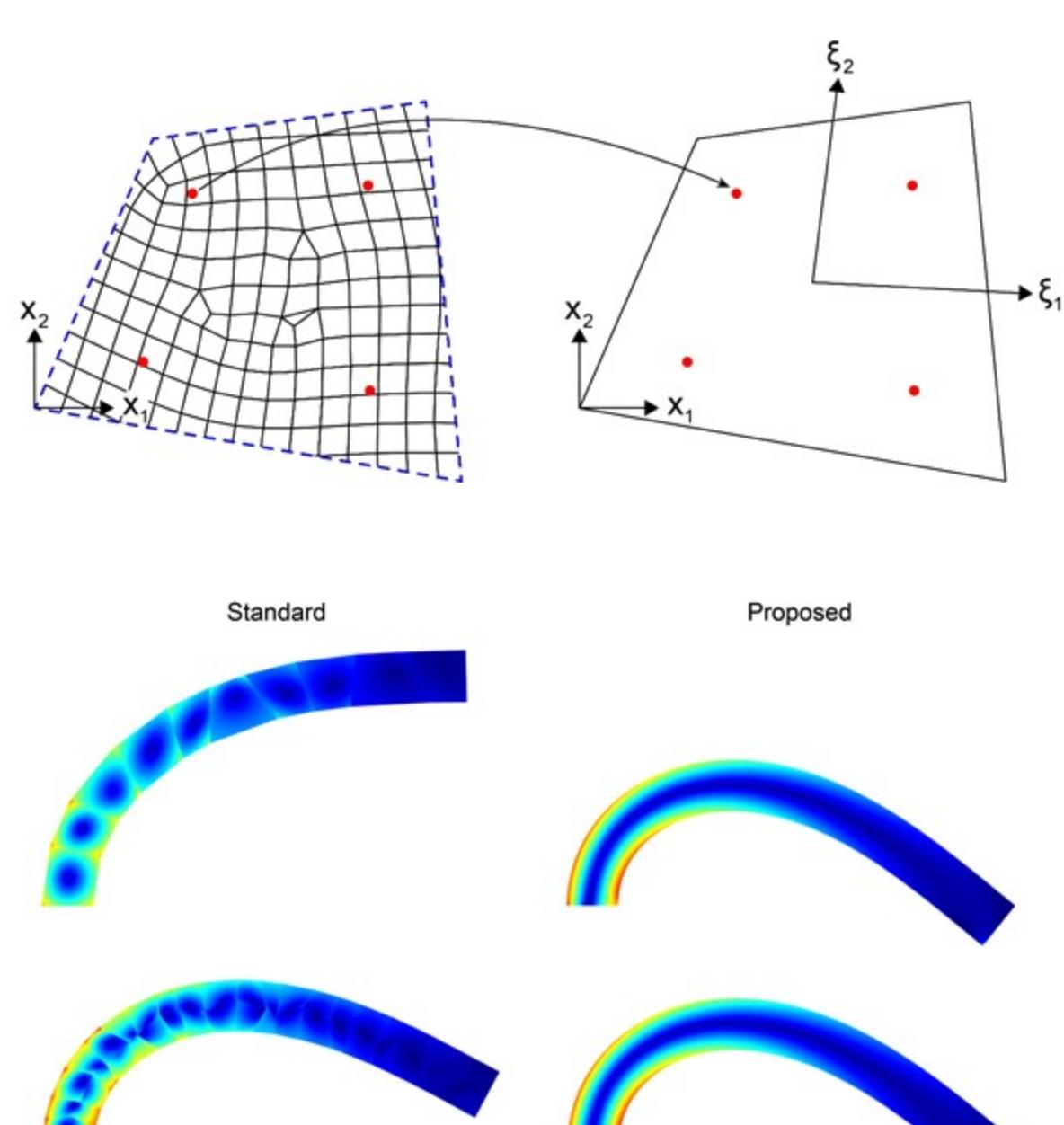
Algebraic dynamic condensation method

Seung-Hwan Boo (2016)



Nonlinear model reduction method

Cheolgyu Hyun (2021)



Self-updated four-node finite element using deep learning

Jaeho Jung (2021)

