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National Technical University of Athens

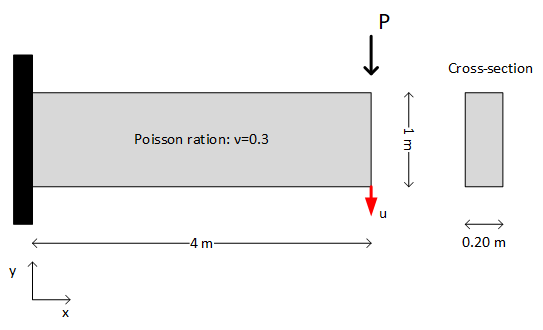
School of Civil Engineering

Acad. Year: 2020-2021

**Course: Stochastic Finite Element methods**

3rd Assignment

Consider the plane stress problem from the 2nd assignment:



with (kN) and given by the formula:

where is a zero-mean stationary Gaussian field with unit variance. The autocorrelation function for is .

1. *Perform a set of 100 system evaluations for different realizations of .*
2. *Use the POD/PCA method to construct a reduced system of equations for the problem, .*
3. *Perform Monte Carlo simulation on the reduced system and obtain the pdf of at the bottom right corner of the cantilever. Compare it with the pdf you obtained in the previous assignment for the full model.*
4. *Estimate the computational gain from POD.*