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National Technical University of Athens

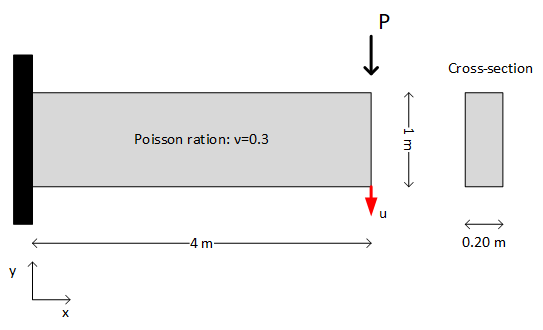
School of Civil Engineering

Acad. Year: 2020-2021

**Course: Stochastic Finite Element methods**

2nd Assignment

Consider the following plane stress problem



where is a random variable following the Gaussian distribution (kN) and the modulus of elasticity is a random field given by the following formula:

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

1. *Develop a FE code for solving the deterministic problem using quadrilateral elements and a 40 x 10 mesh.*
2. *Using the KL series expansion, generate 5000 realizations for and perform Monte Carlo simulation to obtain the histogram of the response , at the bottom right corner of the cantilever.*
3. *Convert the histogram to an empirical probability density function.*