Frequency-Domain Formulation and Convergence Analysis of Biot's Poroelasticity Equations Based on Total Pressure

Cristian Cárcamo[1]   Alfonso Caiazzo[2]   Felipe Galarce[3]   Joaquín Mura[4]

In this talk, we discuss the well-posedness and error analysis of the Biot's Poroelastic equations. To demonstrate the solvability of the poroelastic continuous issue, we first use the well-known Fredholm Alternative. In order to improve computational efficiency and address the issues raised by the discrete inf-sup condition, we present a novel and stable stabilized numerical system that is tuned for equal polynomial order. Additionally, we conduct a numerical analysis to determine the stability of solutions and provide an a priori error analysis. Finally, we present some numerical examples that offer strong evidence of the usefulness and effectiveness of the proposed numerical framework.

References:

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[1]Weierstrass Institute
 carcamo@wias-berlin.de

[2]Weierstrass Institute
 caiazzo@wias-berlin.de

[3]Pontifical Catholic University of Valparaiso, Chile
 felipe.galarce@pucv.cl

[4]Federico Santa Maria University
 joaquin.mura@usm.cl