FINITE ELEMENT METHODS FOR MULTISCALE PROBLEMS

FREDERIC VALENTIN[*], ALEXANDRE MADUREIRA[†]

[*] National Laboratory for Scientific Computing - LNCC
valentin@lncc.br

[†] National Laboratory for Scientific Computing - LNCC
alm@lncc.br

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ABSTRACT

Finite element schemes specially designed to solve multiscale system of partial differential equations have become the standard approach for solving such problems. They often may be seen as a divide and conquer alternative to the direct numerical solution of multiple scale problems which are still out of reach even with modern supercomputers. In fact, from an engineering viewpoint, these methods capture the small scales effect on the large scales by resolving (exactly or not) all the small scale features in paralel. This makes multiscale methods naturally attractive to be used in highly paralel compution. This minisimposium intents to bring the state of recent and the recent advances in developing systematic ways to build and analyse multiscale finite element methods within a very large spectrum of multiple scale applications.