

NONLOCAL MULTI-CONTINUA UPSCALING

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In this talk, we present a rigorous and accurate non-local (in the oversampled region) upscaling framework. Our proposed method consists of identifying multi-continua parameters via local basis functions and constructing non-local (in the oversampled region) transfer and effective properties. To achieve this, we derive appropriate local problems in oversampled regions once we identify important modes representing each continua. We use piecewise constant functions in each fracture network and in the matrix to write an upscaled equation. Thus, the resulting upscaled equation is of minimal size and the unknowns are average pressures in the fractures and the matrix. We present numerical results, which show that the proposed approach can provide good accuracy.

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