

NONLOCAL MULTICONTINUUM UPSCALING OF MIXED DIMENSIONAL COUPLED PROBLEMS IN FRACTURED POROUS MEDIA

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In this work, we present an upscaled model for mixed dimensional coupled problems in fractured porous media. For the fine grid approximation, we consider embedded and discrete fracture models (EFM and DFM) with finite-volume approximation. We construct an upscaled model using the non-local multicontinuum (NLMC) method for the coupled system. The proposed upscaled model is based on the solution of the local constrained energy minimization problem for the construction of multiscale basis functions. Using the constructed NLMC-multiscale basis functions, we obtain an accurate coarse grid upscaled model. We present numerical results for a transport and flow problems, poroelasticity problems and problems with dual-continuum background models. Our numerical results show that the proposed approach can provide good accuracy for problems in fractured porous media.